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COURSE DESIGN AND PREPARATION TEAM

Prof. K. Ravi Sankar,
Director,
School of Management Studies,
IGNOU, New Delhi

Prof. K.V. Rao
Former Vice-Chancellor
Acharya Nagarjuna Univervisty,
Guntur

Prof. G.V. Chalam
Former Dean,
Dept. of Commerce and Business Admn.
Acharya Nagarjuna University, Guntur

Prof. Anjali C. Ramteke
School of Management Studies
IGNOU, New Delhi

Prof. Kamal Vagrecha
School of Management Studies
IGNOU, New Delhi

Prof. Madhu Vij
Faculty of Management Studies
University of Delhi, Delhi

Prof. C.P. Gupta
Department of Financial Studies
University of Delhi, Delhi

Prof. Pankaj Gupta
Centre of Management Studies
Jamia Milia Islamia, New Delhi

Dr. Jayant Kumar Seal
Indian Institute of Foreign Trade
Qutub Insitution Area
New Delhi

Prof. Shital Jhunjhunwala
Department of Commerce
University of Delhi, Delhi

Dr. Ritu Sapra
Department of Commerce
University of Delhi, Delhi

Prof. N. Ramchandran*
Indian Institute of Management
Calcutta

Prof. Braj Kishor*
Department of Business Managemetn
Osmania University, Hyderabad

Dr. Lalit M. Johri*
Faculty of Management of Studie
University of Delhi, Delhi

Prof. V.N. Hukku *
Faculty of Commerce
University of Jodhpur, Jodhpur

Shri S.N. Maheshwari*
Department of Commerce
Sri Ram College of Commerce
University of Delhi, Delhi

Course Editor

Prof. G V Chalam

Course Coordinators

Prof. K. Ravi Sankar
Prof. Kamal Vagrecha

Acknowledgement: Parts of this course is adapted from the earlier MS-04: Accounting and Finance for Managers course and the persons marked with (*) were the original contributors and the profiles are as it was on the date of initial print.

PRINT PRODUCTION

Mr. Tilak Raj
Assistant Registrar
MPDD, IGNOU, New Delhi

February, 2022

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ISBN:

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Further information on the Indira Gandhi National Open University courses may be obtained from the University's office at Maidan Garhi, New Delhi-110 068.

Printed and published on behalf of the Indira Gandhi National Open University, New Delhi, by the Registrar, MPDD, IGNOU.

Laser typeset by Tessa Media & Computers, C-206, A.F.E-II, Jamia Nagar, New Delhi

BLOCK-1

FINANCIAL MANAGEMENT: AN OVERVIEW

Unit 1 Financial Management: An Introduction

Unit 2 Time Value of Money

Unit 3 Risk and Return

Unit 4 Valuation of Securities

COURSE INTRODUCTION

Accounting revolves around reporting past financial transactions while the Finance revolves around planning future financial transactions. As these are two separate functions require different skill sets, all the students are exposed to these areas in two different courses in the core courses itself.

In the first semester you have already studied a course on *Accounting for Managers (MMPC-004)*. This course, **Financial Management (MMPC-014)** teaches you with the essentials of Financial Management that are required by all the students who need to learn basics of finance.

This course is divided into 5 Blocks and contains 15 Units.

Block-1, Financial Management - An Overview, consists of four units provide an introduction on the overview of financial management. The ***first unit*** explains the basic concepts, role of financial manager in business organizations, various functions, and major decisions besides the organization structure of finance function. It also explains how the wealth maximization objective is superior to profit maximization objective of the firm. The ***second unit*** explains the concept of time value of money and illustrates the computation of the implied rate of interest, principal amount and annuities in borrowing and lending transactions. The concepts of risk and return, types of risks and the factors affecting risk and measurement of risk and return are discussed in ***unit three***. ***Unit four*** presents the valuation of securities and types of approaches of calculation of fixed income securities as well as variable income securities.

Block-2, Cost of Capital and Investment Decisions, comprises three units. ***Unit five*** provides the conceptual understanding of the cost of capital and its variants. It also illustrates the computation of cost of specific sources of long-term finance and computation of weighted cost of capital. The ***unit sixth*** explains the need for investment appraisal and familiarises the methods of appraising capital projects, and explains their relative merits and demerits. ***Unit seven*** describes the concepts and components of working capital, significance, determinants of the size of working capital and major components of current assets explained along with the criteria for efficiency in managing working capital.

Block-3, Financing Decisions, contains four units and discusses about the financial markets, sources of finance and capital structure design and the leverage analysis. ***Unit eight*** discusses about the nature and characteristics of long-term financial instruments and the significance of financial markets in India. The ***ninth unit*** shows the different sources of finance and their merits and limitations. The capital structure importance and the factors that have bearing on determining the capital structure and an appropriate capital structure have been discussed in ***unit tenth***. It also highlights important factors to be considered for determining the capital structure and explain in detail the different approaches to evaluate alternative capital structures. The ***eleventh unit*** of this course focuses on the concepts of leverages and leverage

analysis to examine the consequences of financial leverage for a business firm and assess the risk implications of financial leverage.

Block-4, Dividend Decisions, comprises two units and discusses different theories of dividends and dividend policies. **Unit 12** specifically explains the nature and significance of dividend decision and various theories of dividend and their impact on the dividend decisions and on the value of a firm. **Unit 13** deals with the dividend policies. The various forms of dividend, factors affecting the dividend decisions and the role of financial manager in dividend decisions are discussed in this unit.

Block-5, Emerging Issues in Finance, introduces you to some emerging issues of Finance, viz., Behavioural Finance and Financial Restructuring. **Unit-14** discusses the various behavioural aspects of finance. **Unit-15** provides an understand of the concepts of corporate restructuring and financial restructuring, diverse methods being followed by the companies in undertaking restructuring and the procedure involved in each of the methods of financial restructuring. It also highlights the merits, demerits, and reasons of each of the options available for restructuring.

This course provides a comprehensive coverage of all the essential and basic concepts of financial management and provides required basic knowledge of Finance to all the students, as this is a core course. Students who want to learn more about Finance can choose Finance as their specialization and learn Finance in more detail.

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UNIT 1 FINANCIAL MANAGEMENT: AN INTRODUCTION

Objectives

The objectives of this unit are to:

- Familiarise with the scope and functions of Financial Management
- Explain objectives of the business firm
- Discuss major decisions of the Finance Function
- Describe the structure and organisation of the Finance Department.

Structure

- 1.1 Introduction
- 1.2 Nature of Finance Function
- 1.3 Approaches of Financial Management
- 1.4 Financial Decisions
- 1.5 Objectives of the Firm
- 1.6 Risk-Return Trade-off
- 1.7 Financial Goals and Firm's Objectives
- 1.8 Conflict of Goals: Management vs. Owners
- 1.9 Organisation of Finance Function
- 1.10 Role of Finance Manager
- 1.11 Finance and related Disciplines
- 1.12 Summary
- 1.13 Key Words
- 1.14 Self Assessment Questions
- 1.15 Further Readings

1.1 INTRODUCTION

If we observe any business organization, small or big, we find people doing different activities in it. These people are carrying out various activities like:

- Managing the activities related to manufacturing of goods or providing services,
- Managing the people involved in various works of the organization,
- Selling different products that are manufactured or the services being offered by the organization, or
- Arranging and making available required financial resources for carrying out the activities of the firm.

All these activities are managed by a couple of people in a small business organization, and by differently specialized people in large organizations. In big organizations, these activities are divided into different functional departments, called, the production department, human resource department, marketing department, and finance department. In other words, different people involved in large business organizations have been divided and classified into different groups and perform different functions of management.

Finance is the lifeblood of any business and one of common denominator required for all the varied business activities. It must be sufficient to meet the requirements of the company. One needs outstanding financial management skills to start or run a successful firm. Every business concern must keep a sufficient amount of cash in hand to ensure smooth operations and to run the business to meet the company's objectives. We cannot overlook the utility of funds at any moment or in any circumstance. Thereafter, the finance department is one of the most crucial components of every corporation. As a result, it is necessary to understand what financial management is and why it is vital. The activities of every aspect of a business have an impact on the performance of the business and must be evaluated and controlled.

Finance is a fundamental and crucial component of any business. Without sufficient financing, and profit-making organisations will struggle to survive for lengthy periods. Apart from this, effective management of financial resources is necessary for long-term sustainability and survival. Every company has different business units that help it run and thrive. Finance, out of all of the elements, is most likely to exist even before a firm begins to work. Finance professionals determine if a business initiative is viable and how it will generate revenue to stay afloat. It is critical to have competent management for such a vital function department. That is why it is highly important to know what it is before looking at its roles.

1.2 NATURE OF FINANCE FUNCTION

The main goal of any business firm is to make a profit. For this purpose, it invests money in a variety of income generating assets sourced from various sources. As a result, the finance function is aimed at the following decisions:

- to determine the fund's requirement
- to determine the assets to be acquired or fund deployment
- to determine the pattern of financing the assets.

Thus, the finance function is a managerial activity involved with the planning and control of a company's financial resources to achieve returns on invested capital. Raising and employing capital to create profit, as well as paying returns to capital suppliers, are all part of a company's financial function. As a result, the company's cash will be invested in the best investment possibilities in the hopes of making a profit in the future. Finance and other functional responsibilities are closely intertwined because all firm operations, whether directly or indirectly, entail the acquisition and use of funds.

Although distinguishing the finance function from the other business functions might be challenging, the finance function can be broadly stated as follows:

- i) Routine functions
- ii) Managerial functions

Routine tasks, do not demand a greater level of managerial expertise to do. The regular functions are essentially clerical and are meant for the proper management of managerial tasks. Some of the most essential routine functions are:

- i) Supervision of cash receipts and payments, as well as cash security.
- ii) Safekeeping and custody of securities, insurance policies, and other precious documents.
- iii) Taking care of the methodological procedures of new outside financing.
- iv) Report preparation and record-keeping.

The supervisory jobs are in charge of these day-to-day operations. About three to four decades ago, the finance function was limited to routine operations, and the financial executive's involvement in managerial finance activities was a relatively new development.

More financial planning, management, and execution are required for managerial activities. Managerial functions essentially relate to raising of funds and deployment of funds. It also deals with management of surplus/deficit of funds. Apart from these core activities financial manager is also actively engaged in cost management and taxation.

1.3 APPROACHES OF FINANCIAL MANAGEMENT

Financial management is the study of the process of producing and wisely using financial resources to improve the value of a company and consequently its shareholders. According to James C. Van. Horne, financial management at a company aims to make the best investment, financing, and dividend decisions. There are two different approaches to Financial Management. They are:

- a) Traditional approach.
- b) Modern approach

a) Traditional Approach:

According to the traditional approach, financial management is a discrete field of study and its scope is confined to money raising. As a result, the traditional approach to finance was restricted to businesses obtaining funds to fulfill their financial requirements. The subject was known as corporate finance until the mid-1950s since the primary focus of the finance function at

that time was on the acquisition of funds. It covered topics such as financial instruments, banking, and insurance.

Further, certain specific events like mergers, liquidations, consolidations, and restructuring aggravated the difficulty of raising capital. These are the fundamental aspects of corporate finance, a subject that has little to do with the distribution of a company's funds. The financial role, on the other hand, has been deleted from the old paradigm due to major concerns. The limitations of this method can be divided into the following groups:

- i) In the old technique, the focus is on corporate enterprises obtaining funds, which was woven around the perspectives of fund suppliers such as investors, financial institutions, investment bankers, and others, i.e., outsiders. It seems that the standard method was to look in from the outside. Another limitation was that internal financial decision-making was completely ignored in this approach.
- ii) The old method's second objection was that financial management was limited to episodic events such as mergers, acquisitions, reorganizations, and consolation, among others. The finance role was confined to a description of these rare occurrences in an enterprise's life in this approach. Thus, it places over-emphasis on the topics of securities and its markets, without paying any attention to the day-to-day financial aspects.
- iii) Another fault in the traditional strategy was that it was entirely focused on long-term financing and investments, ignoring the crucial function of working capital management. As a result, this technique has fallen short in accounting for basic financial management challenges.

The early finance books show that the traditional approach to financial management reigned during the early stages of corporate expansion. Green's book, published in 1897, was the first of its kind, followed by Meads on Corporation Finance in 1910, Doing's on Corporate Promotion and Reorganization in 1914, and so on.

As mentioned earlier, the traditional style highlighted financial concerns from the perspective of outsiders rather than management. It placed a strong emphasis on descriptive content and exaggerated the importance of long-term finance. It lacked analytical information and placed too much emphasis on long-term investing.

b) Modern Approach:

Following the 1950s, a combination of economic and environmental factors, including technical developments, industrialization, fierce competition, government involvement, and population growth, needed efficient and effective financial resource management. In this case, management must prioritize the most efficient use of the company's resources. With the new approach, the focus has shifted from episodic finance to managerial financial difficulties and from fundraising to efficient and effective fund management.

As a result, the smart use of funds and resources is the larger role and vision of modern finance manager. The financial manager should be concerned with

determining the size and nature of the technology, setting the business's direction and growth, shaping profitability, risk tolerance, asset mix selection, and determining the best capital structure, among other things. This is because financial decisions have such a large impact on all other business activities. The new technique is an analytical way of looking at a company's financial challenges.

According to the new method, financial management is concerned with the resolution of key areas related to a company's financial activities, such as investment, financing, and dividend decisions. Modern financial managers must make the most rational financial decisions they can. These decisions must be made in a way that maximises the firm's financial resources. Because they need a high level of administrative ability, management talents, and decision-making procedures, these judgments are known as managerial finance functions.

1.4 FINANCIAL DECISIONS

Finance responsibilities are critical in corporate management, regardless of the kind, size, age, or structure of the company. A business finance function is the link between the value of a commercial enterprise and its many variables. The value of a company enterprise to its owners is its net worth. The difference between the market value of assets and the value of liabilities (claims from third parties) is referred to as net worth.

Net Worth = Assets - Liabilities

When a company's net worth rises, it can be assumed that the company's value is increasing. The following elements influence the value of a company:

- i) **Internal:** Investment activities; financing mix; distribution of profits
- ii) **External:** State of the economy; Capital market conditions; Tax rates

Some of these factors are within control of the company, while others are out of company's reach. Internal or controllable elements determine the value of a company, providing the uncontrollable factors remain constant. As a result, the investment, financial condition, and profit distribution of a corporation define its value.

$$V = f [I, F, D]$$

The corporation's financial activities can be separated into three key decisions: **investment**, **financing**, and **dividend**. Each of these choices must be considered against the firm's goal: the optimal combination of the three will maximise the value of the stock to its owners. We must assess the cumulative impact of these acts on the firm's value because they are interconnected. Let us discuss these in detail, hereunder:

A) Investment Decision:

The investment decision is the most important of the three options. It has to do with the assets in which the business puts its money. There are two sorts of assets that can be purchased:

- i) Long-term assets that will generate a return over time.
- ii) Short-term current assets that can be converted into cash in the ordinary course of business, usually within a year.

A corporation may make one of two types of asset selections. The first of these is the capital budgeting decision, which deals with the first category of assets. The other is a liquidity decision, which applies to short-term assets.

i) *Capital Budgeting Decision:*

It refers to the selection of an investment plan for capital assets whose benefits are anticipated to surface in the future during the project's lifetime. This is a company's most crucial financial decision. The initial stage of the capital budgeting choice is to choose an investment from among the available possibilities. The decision will always be based on the benefits and returns of each option. As a result, estimating the value of an investment proposal is a critical component of capital budgeting. Another aspect of the capital budgeting decision is the assessment of risk and uncertainty. The accrual of the advantages of the planned investment is unpredictable because they will be realized in the future.

There is a level of risk associated with this decision due to the uncertain future advantages. As a result, the expected return on the investment should be balanced against the risk involved. Finally, this return should be compared to a set of benchmarks, which are referred to as cut-off rates, needed rates, hurdle rates, minimal rates of return, and so on. For this reason, the appropriate standard to use is the company's cost of capital, which is another important aspect of the capital budgeting decision.

Thus, the investment decision involves a current cash outlay for an expected stream of cash inflows in the future.

Time	t_0	t_1	t_2	...	...	...	t_n
Cash flows	Current Cash outlay (Co),	cash inflow-1	cash inflow-2		cash inflow-n		

The cash flows (both outflows and inflows) occur at different times. They are not comparable as a result. The temporal value of money is computed by discounting all cash inflows to determine the present value (or) of all cash inflows. The current cash outlay or project cost is then compared to the PV of cash inflows.

This concept has been discussed in detail in a subsequent unit in this course.

ii) *Liquidity Decision:*

The liquidity choice pertains to the management of current assets, which is necessary for any business firm's solvency in short term. The main purpose of

current asset management is to strike a balance between profitability and liquidity. These two concepts are opposed. If a company does not have enough working capital, it will become illiquid and unable to meet its obligations, placing it at risk of bankruptcy. Profitability, on the other hand, diminishes when current assets are very huge as the funds are tied in current assets. Current assets are mainly cash, inventory of raw material, work in progress, finished goods and trade credit given to customers.

The liquidity decision's objective is the main strategy and consideration in assuring a trade-off between profitability and liquidity. Furthermore, to avoid deficiency or excessive locking up of funds in these assets, the funds should be invested optimally in the current assets in question. An overview of working capital management and effective resource allocation on individual current assets should be included in the liquidity decision.

This concept has been discussed in detail in a subsequent unit in this course.

B) Financing Decision:

The financing decision, which determines the firm's best finance mix, is the firm's second major decision. Finance mix is the proportion of equity and debt in capital structure. The finance manager must decide how the funds will be raised to meet the firm's investment needs after agreeing on the asset mix. The most essential consideration in this selection is the proportion of stock and debt capital. Because debt capital influences shareholder return & risk and the firm's cost of capital, the financial manager should determine the optimal capital structure to maximise shareholder's return while minimizing risk. In other words, the debt-equity combination with the lowest cost of capital and the highest market value of the firm's equity.

C) Dividend Decision:

A company's dividend policy is the third most important decision it makes. The company's Finance Manager must determine whether to distribute all profits or keep a portion for re-investment and distribute the rest of the profit. The influence on the shareholders' wealth should be considered while taking a dividend decision. The optimum dividend policy maximises the company's stock market value. The dividend payout ratio should ensure that the shareholders are not dissatisfied and the value of their shares is not adversely affected. The elements that influence the firm's dividend policy in practice are also an important aspect of the dividend decision.

This concept has been discussed in detail in a subsequent unit in this course.

To summarise, financial management means applying the financial analysis techniques to these three decisions which are taken by the company in its course of operations.

1.5 OBJECTIVES OF FIRM

The company is a form of business in which ownership and management are separate. The shareholders are the owners, and the Board of Directors is the

shareholders' representative to manage the company. Different decisions are made by the management team that has an impact on the company's profitability and long-term viability. When these strategic decisions are made, what should the firm's goal be? It is the central question, and the answer of value creation always results in financial gain for owners. Because shareholders are investing their money and incurring the most risk, they expect the company to provide them with the best possible returns.

The management must provide an optimum solution to three questions to achieve the goal of maximum return: where to invest and in what amounts, how to finance and in what amounts, and when to pay dividends, as shown in the preceding discussion. These elements are related to the company's investing, financial, and dividend policies. To meet them logically, the company must have a purpose. It is widely accepted that a company's financial purpose should be to maximise the economic advantage associate with the owner's financial stake. However, there is disagreement over how to maximise the economic advantage to the owners. The two most well-known and often discussed criteria in this regard are:

- a) Profit maximisation, and
- b) Wealth maximisation

a) Profit Maximisation

According to this idea, actions that increase the firm's profit are adopted, while actions that reduce profit are avoided. Increased output from a restricted quantity of scarce inputs or lowered cost of production for a certain output leads to maximization of profit. According to contemporary economics, profit maximisation is a criterion for economic efficiency since profits provide a standard by which economic performances can be judged under perfect competition. Further, under perfect competition, profit maximisation behavior by businesses leads to an effective allocation of resources. Since capital is a finite resource, the finance manager must maximise earnings by making the most effective use of it. As a result, a company's purpose should be to maximise profits, as evidenced by the following arguments:

- a) Economic activity aims at utility maximisation, which is measured in terms of profits
- b) Profit is a measure of economic efficiency
- c) Profit leads to the efficient allocation of resources
- d) It leads to efficient use of important and scarce resources.

As a result, it is stated that profit maximisation should be the primary criterion for final financial management decisions.

Limitations of Profit Maximisation Goal:

- i) **Ambiguity:** Profit maximisation is a rather ambiguous and inaccurate goal. Profit has a wide range of meanings, and various people perceive it differently. Profit, for example, could be:

Short-run profit	or	Long-run profit,
Total profit	or	Rate of profit,
After-tax profit	or	Before-tax profit,
Return on equity	or	Return on total capital employed.

Hence, there will always be a dilemma as to which of these variations of profits should a company try to maximise.

- ii) **It ignores the timing of benefits:** Profit maximisation ignores the fact that investment rewards arrive at different times. The goal makes no difference between two alternative projects with different profit time patterns. The earnings from projects 'A' and 'B', for example, are as follows:

Time-pattern of profits		
Year	Project A (Rs.)	Project B (Rs.)
1	5000	15000
2	10000	10000
3	15000	5000
Total Profit	30000	30000
Average Profit	10000	10000

Project 'B' is providing higher early returns. The basic dictum of financial planning is "**Earlier the Better**". According to this principle, Project 'B' is preferable. The profit maximisation goal ignores the time value of money.

- iii) **It ignores the Quality of Benefits:** If the predicted earnings are more assured, the quality is high because the range of fluctuation is small. Profit maximisation ignores the value of benefits and does not consider the risk connected with profits. The following table demonstrates this:

Quality of Benefits- Profit per Annum		
State of the economy	Project-A (Rs.)	Project-B (Rs.)
Recession (pessimistic)	9000	0
Normal (most likely)	10000	10000
Boom (optimistic)	11000	20000
Average	10000	10000

Project 'A' has higher quality earnings because the range is small [Rs 11000 - Rs 9000 = Rs 2000], but Project 'B' has a larger range [Rs 20000 - 0 = 20000], suggesting low-quality profits. Therefore, the profit-maximisation goal is unable to differentiate between various ventures. Hence, profit maximisation cannot be an objective in end of itself even if it is a disadvantage to the owners or shareholders. The incremental profits may not result in a rise in earnings per share if a firm invests in new initiatives by

raising additional money diluting the capital base through the issuance of additional shares. If the new project's return is lower than the company's previous earnings, earnings per share (EPS) will fall.

The pursuit of huge profits may lead to the company's liquidation, as it entails a high level of risk and it is against the shareholders' best interests. As a result, profit maximisation is not regarded as a viable goal. The goal of EPS maximisation is additionally limited by the following factors:

- i) it does not specify the time of expected returns
- ii) it does not consider the risk associated with future earnings, and
- iii) it does not consider the financial risk.

Given the discussion above, it is evident that the profit maximisation idea is incomplete for a corporation in terms of financial decisions, such as investment, finance, and dividend policies. It is not only confusing and unclear, but it also ignores the two fundamental components of risk and time value of money. The most appropriate operational decision criteria should consist of the following aspects:

- i) it should be precise.
- ii) it should consider both the quality and quantity dimensions of the receipts.
- iii) it should be based on the bigger the better principle; and
- iv) it should recognize the time value of money.

An alternative to profit maximisation, which addresses these issues, is the wealth maximisation objective.

b) Wealth Maximisation

The firm's most widely accepted goal is to maximise the value of the company for its shareholders. The reasonable guide for conducting a business is the maximisation of shareholder wealth. According to the wealth maximisation goal, managers should strive to maximise the present value of the firm's expected profits. The discount rate (cost of capital) is used to assess the present value of future rewards, which considers both time and risk. As a result, the discount rate (capitalization rate) used is the rate that represents the temporal and risk preferences of capital sources.

The wealth maximisation criterion's second aspect is that it considers both the amount and quality aspects of benefits, as well as the time value of money. When all other factors are equal, certain income is valued higher than income that is uncertain. Likewise, benefits gained earlier in life should be regarded higher than advantages acquired later in life. Thus, the objective of wealth maximisation has several distinct merits.

It is undeniable that the goal of wealth maximisation is superior to the goal of profit maximisation. A comparison of the present value of future benefits to the cash outflow is used to achieve the wealth maximisation goal. If an activity has a positive net present value, meaning the present value of future cash flows exceeds the present value of outflows, reflecting both time and

risk, it is considered to build wealth and should be preferred. Actions that have a lower value than their cost, on the other hand, deplete the firm's wealth and should be avoided. In the case of mutually exclusive projects, when one only of the projects is to be chosen, the alternative with the greatest net present value should be selected.

The goal of financial management, according to the modern approach, is to maximise the firm's wealth. The goal of wealth maximisation can also be symbolically defined using the short-cut method as follows:

$$W = \frac{A_1}{1+k} + \frac{A_2}{(1+k)^2} + \dots + \frac{A_n}{(1+k)^n} - C_0$$

$$= \sum_{t=1}^n \frac{A_t}{(1+k)^t} - C_0$$

Where,

$A_1, A_2, \dots, A_n$ represents the stream of benefits (cash inflows) expected to occur in the investment project.

' C_0 ' is the cost of the project.

' k ' is the discount factor/capitalization rate to calculate the present value of expected cash flows; and,

' W ' is the net wealth of the firm (the difference between the present value of the stream of expected benefits and the present value of cash outflow).

The wealth maximisation criteria recognize the time value of money and address risk, which is determined by the uncertainty of predicted returns, and reflected by k . High risk projects will have higher k as compared to low risk projects. Wealth maximisation concept is more robust concept than maximisation of profits as it incorporates both the timing of cashflows and risks associated with these cashflows.

Implications of Wealth Maximisation:

It aims at the prosperity and perpetuity of a company.

It helps in measuring the performance of a company.

It helps in the allocation/reallocation of scarce resources.

It helps the company in discharging its other responsibilities effectively, such as:

- Consumer protection
- Payment of fair wages
- Provision of safe working conditions.
- Environmental protection.
- Support for social problems.
- It leads to efficient use of scarce and precious resources.
- It considers risks associated.

1.6 RISK-RETURN TRADE-OFF

The firm's financial decisions are interlinked and therefore they influence the market value of its shares by impacting return and risk. The following is a formula for expressing the relationship between return and risk:

$$\text{Return} = \text{Risk-free rate} + \text{Risk premium}$$

The risk-free rate is the compensation for the time that the investors part with their saving. Proxy for risk free rate is generally the return earned on government securities of similar tenure. The risk premium is paid for risk coverage. A healthy balance between return and risk should be maintained to optimise the market value of the firm's shares. A risk-return trade-off is a term used to describe such a balance. In the following Figure-1.1, you can see an overview of the functions of financial management:

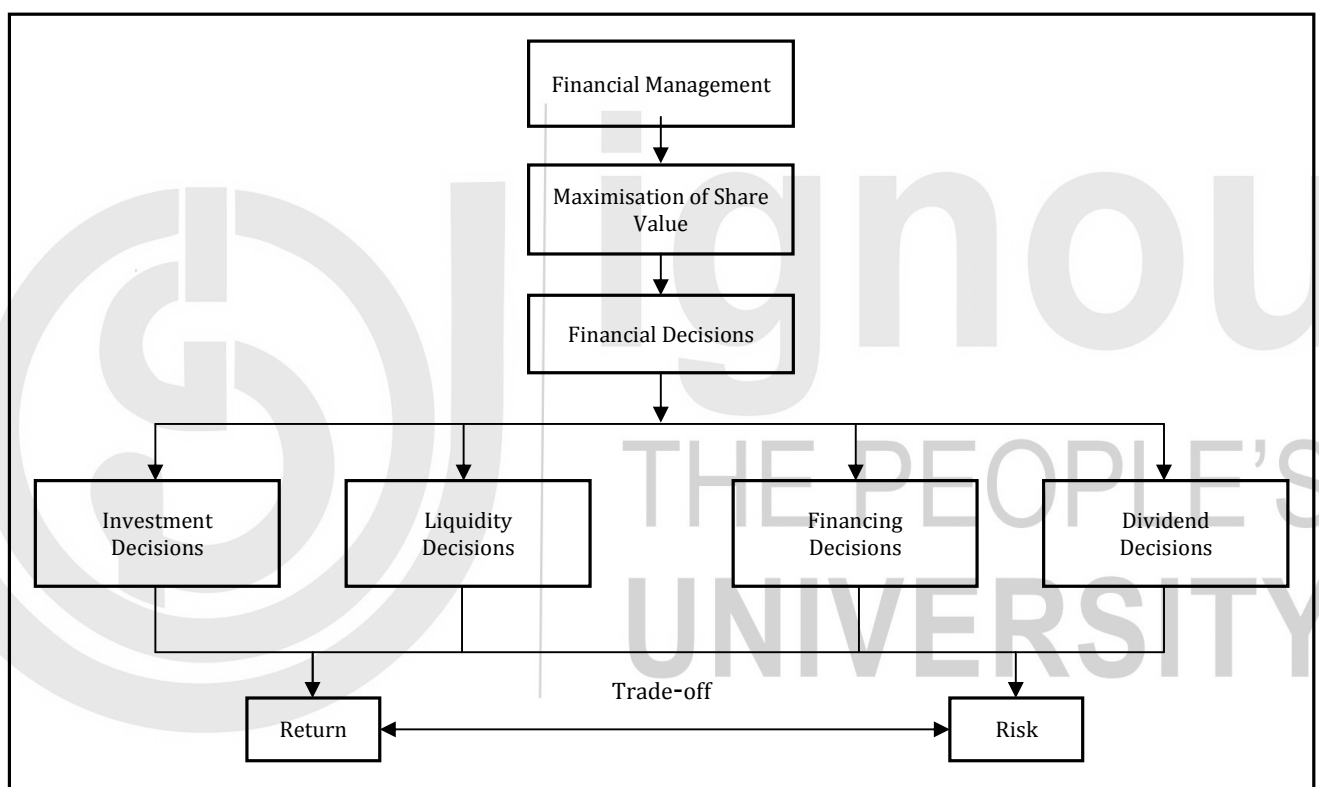


Figure-1.1: An Overview of Financial Management

1.7 FINANCIAL GOALS AND FIRM'S OBJECTIVES

A question may emerge in the shareholders' wealth maximisation criterion; is the firm's goal to maximise its wealth? Is there a company that exists solely to serve the interests of its owners? The primary goal of business firms is not to maximise shareholder wealth. The firm's survival and future growth are always dependent on how well it satisfies its clients by providing high-quality goods and services. In addition, organizations in practice define their vision or mission in terms of technology, leadership, market share, image, employee welfare, and so on. As a result, the company bases its strategy on such fundamental goals as technology, production, purchasing, marketing,

and finance. For this, the company makes decisions that are in line with its objectives.

As a result, the wealth maximisation objective is the second level criterion, ensuring that economic performance meets a minimal norm. The Management serves as both an agent for the owners and a trustee for the other stakeholders. As a result, the Management must balance the interests of the owners with those of creditors, employees, the government, society, and so on.

1.8 CONFLICT OF GOALS: MANAGEMENT VS OWNERS

The Management of a joint-stock corporation is responsible for making decisions. Management may not behave in the best interests of the shareholders when making decisions; they might pursue their interests, job security, and so on. In other words, there may be a misalignment between the shareholders' goal of wealth maximisation and the actual aims followed by the Management of the firm. The separation of Ownership and Control (Management) roles in these organizations has been identified as the key reason for this conflicting situation.

However, pursuing just the management's interests is unlikely because management's ability to act in their interests will be limited by constant scrutiny by owners, employees, creditors, customers, and the government. From their point of view, each group associated with the organization will evaluate managerial performance. The management's survival will be jeopardized if the organizations aims are not met. The wealth maximisation criterion could be aligned with the interests of the organization's stakeholders in general. However, there may be a contradiction between the shareholder's and management's ambitions, in which case the management may play it safe and create adequate wealth for the shareholders, rather than the maximum. Such a Management's attitude towards the shareholders' goal will sabotage the goal of maximisation of shareholder value.

1.9 ORGANISATION STRUCTURE OF FINANCE FUNCTION

The finance function is an essential component of any business, and it is linked to all other management functions such as manufacturing, marketing, and human resources. Specific tasks are carried out by specialists in the field of finance. The organization of finance functions can be better understood by the following Figure-1.2.

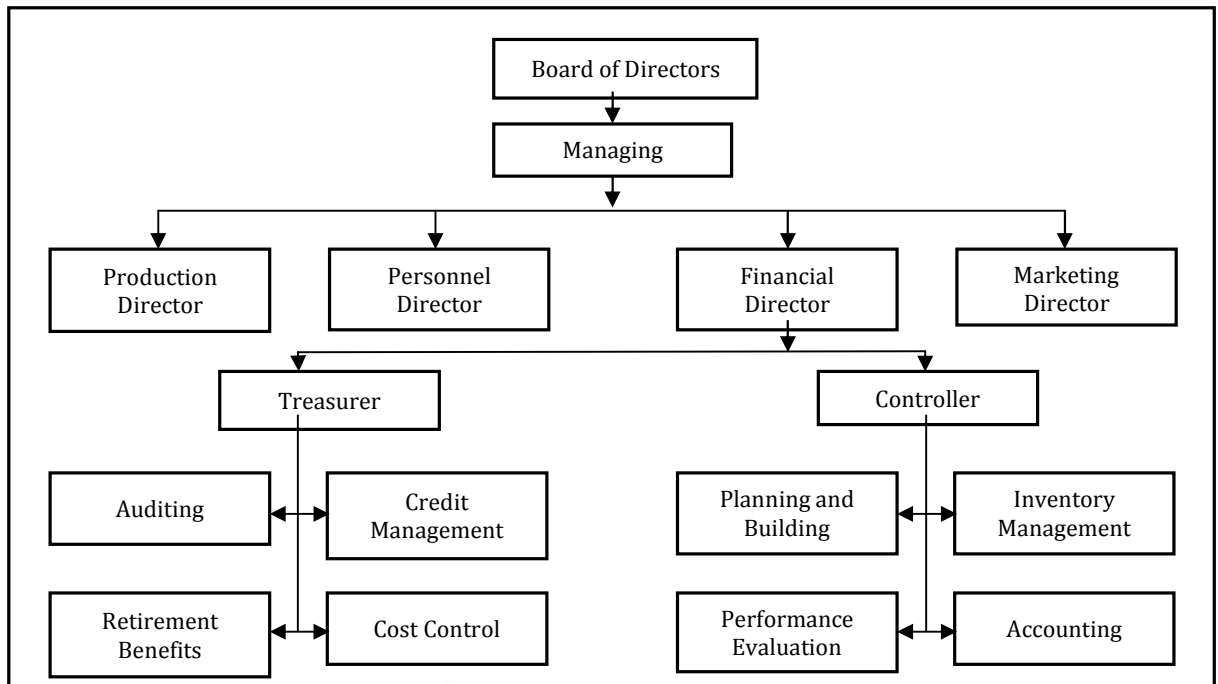


Figure-1.2: Organisation for Finance Function

Because the finance function is a major functional area, top management is ultimately responsible for carrying out these functions. However, the exact nature of the finance function's organization varies from firm to firm based on criteria such as; the size of the firm, the nature of the business, the skill of the financial executive, financial philosophy, and so on. Similarly, the title of the financial department's top executive varies greatly depending on the company. They are known as Finance Managers vice-president (Finance) Director (Finance) Financial Controllers and so on. Figure-1.3 shows that the finance function is one of the major functional areas, and the Financial Manager/Director is under the control of the Board of Directors.

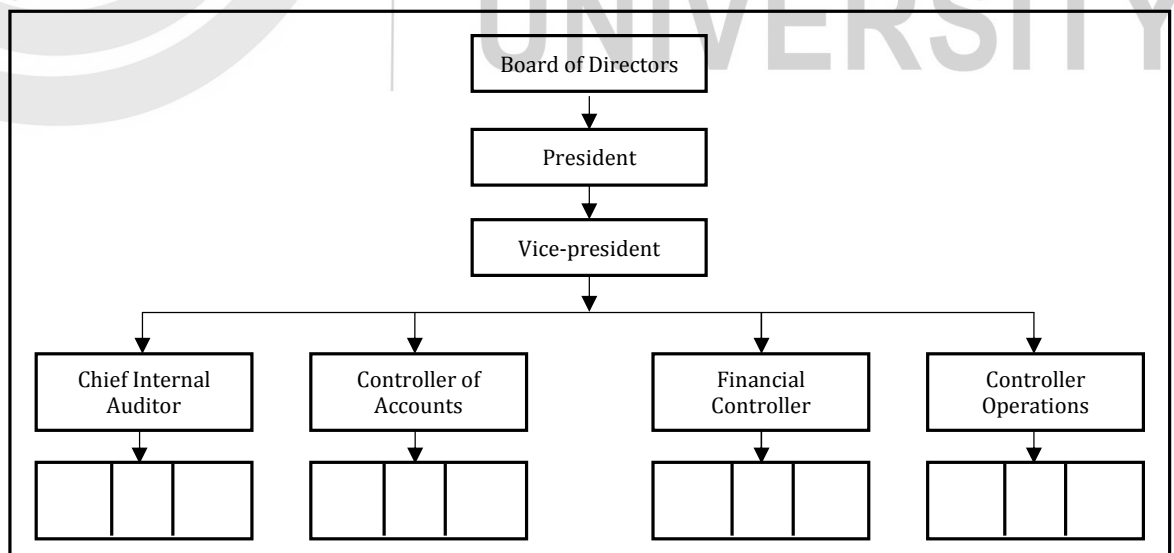


Figure-1.3: Organisation for Finance Function in a Multi-Divisional Indian Company

Controllers and treasurers report to the chief executive and are in charge of the firm's sub-functions, such as accounting and control, and financing. The treasurer's responsibilities include obtaining financing, maintaining relationships with investors, banks, and other financial institutions, short-

term financing, cash management, and credit administration, while the controller's responsibilities include financial accounting, internal audit, taxation, management accounting and control, budgeting, planning and control, economic appraisal, and so on.

1.10 ROLE OF FINANCE MANAGER

The following are some of the responsibilities of the finance manager of a company:

- To estimate capital requirements for various projects and offers to fund for them.
- To maintain liquidity and solvency to fulfill short-term and long-term obligations.
- To keep in contact with the stock exchanges, stockholders, bankers, and financial institutions.
- To estimate the risk and propose alternative risk-reduction strategies.
- To take established practices into account while deciding on credit policy.
- To report to external agencies, viz., financial institutions, tax authorities, government, etc.
- To meet numerous duties under various laws, such as tax laws, SEBI, and so on.
- To arrange for an internal audit to be carried out to ensure that suitable checks and controls are in place.
- To decide the dividend policy of the company.

All of the aforementioned responsibilities are expected to be carried out by the financial manager, within the confines of the applicable legislation, to maximise shareholder wealth

1.11 FINANCE AND RELATED DISCIPLINES

Finance, on the one hand, and other related disciplines and subjects, on the other, are inextricably linked. It makes extensive use of related disciplines and fields of research. Accounting and economics are the most important areas which are closely related to Finance, although areas like marketing, production, quantitative methods, and so on also have an impact on finance. In the following sections, the relationship of finance with these disciplines is discussed.

i) Finance and Accounting:

Finance and accounting are closely related to the extent that accounting is an important input in financial decision-making.

Accounting is a crucial component of the financial function. The financial statements are used to generate data. The information in these statements aids

financial managers in evaluating the firm's previous performance and potential directions, as well as meeting certain regulatory requirements. Accounting and finance are thus functionally intertwined.

The following are the fundamental differences between finance and accounting in terms of the treatment of funds and decision-making:

- a) ***Treatment of funds:*** The accrual principle governs the measuring of funds in accounting. For example, revenue is recognized at the point of sale rather than on credit collection. Similarly, expenses are recorded when they are incurred but not when they are paid. In finance, however, the treatment of funds is based on cash flows. That means here the revenue is recognized only when received - or paid in cash.
- b) ***Decision Making:*** Accounting is concerned with collecting and presentation of financial data. This information is used by the Financial Manager to make financial decisions. It does not imply that Accountants or Financial Managers never make choices or prepare data. However, accountants' primary role is data gathering and presentation, but the Financial Manager's primary role is financial planning, controlling, and decision-making. As a result, finance takes over where accounting leaves off.

ii) **Economics and Finance:**

The study of the theory of the company in economic theory led to the development of the theory of finance in the 1920s. When building decision models that are likely to lead to the most efficient and successful modes of operation inside the organization, the financial manager uses microeconomics. Further, the marginal cost and revenue concepts are used in making investment decisions, managing working capital, etc. in the finance field.

1.12 SUMMARY

In this unit, we have tried to introduce you to an overview of financial management emphasizing its importance in a firm. We also talked about how the previous notion of 'Corporate Finance,' which focused solely on the provision of finances to a business, has been replaced by a modern approach that views finance as an integral part of total management rather than just raising cash, and the scope of finance. The emphasis then shifted from soliciting funds to efficient and effective use of finances, with a focus on managerial issues. Profit maximisation and wealth maximisation goals have been explored, as well as their importance. Finally, we looked at how finance functions are organized and associated with finance disciplines.

1.13 KEY WORDS

Financial Management: It is an activity concerned with planning and controlling the firm's financial resources to generate returns on its invested funds to achieve the objectives of the firm.

Profit Maximisation: It is one of the objectives of the firm to earn higher returns on its resources, which means higher dividends to the investors. It is nothing but a criterion for economic efficiency as profits provide a yardstick by which economic performances can be judged under the condition of perfect competition.

Wealth Maximisation: It is the most widely accepted objective of the firm for its owners, which states that the management should seek to maximise the present value of the expected returns of the firm.

Net Present Value: The Present Value of an investment project's net cash flows minus the project's initial cash outflow.

Capital Structure: The mix of a firm's permanent long-term financing represented by debt, preferred stock, and common stock equity.

Discounting: Reduction of some future amount of money to a present value at some appropriate rate using concept of the time value of money.

1.14 SELF ASSESSMENT QUESTIONS

1. Write in brief the scope and functions of Financial Management.
2. Distinguish between Profit Maximisation and Wealth Maximisation of the firm.
3. In what ways is the role of a Finance Manager different from that of an Accountant?
4. What are Finance functions? Explain their importance and relevance.
5. Discuss the role of a financial manager in a corporate business enterprise.
6. What is the nature of the risk-return trade-off faced in financial decision-making?
7. Discuss the problems of a finance manager in the management of finance functions in the Indian context?

1.15 FURTHER READINGS

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UNIT 2 TIME VALUE OF MONEY

Objectives:

The objectives of this unit are to:

- Explain and illustrate the concepts of future value, time value of money.
- Illustrate the computation of future value and the present value of money.
- Application of time value of money in financial decisions.

Structure:

- 2.1 Introduction
- 2.2 Future Value
- 2.3 Calculation of Future Value
- 2.4 Present Value vs. Future Value
- 2.5 Time Value of Money and its Significance
- 2.6 Calculation of Time Value of Money
- 2.7 Financial Decisions - Time Value of Money
- 2.8 Summary
- 2.9 Key Words
- 2.10 Self-Assessment Questions.
- 2.11 Further Readings

2.1 INTRODUCTION

You must have heard that a rupee today is worth more than a rupee tomorrow. Do you know why is it so? Now, let us take an example. Sriram's grandfather decided to give a gift of Rs. One lakh at the end of the fifth year; and gave him a choice of having Rs. 75,000 today. Had you been in Sriram's place what choice would you have made?

Do you accepted Rs. 1,00,000 after five years or Rs. 75,000 today? What do you say? Rs. 75,000 today is much more attractive than Rs. 1,00,000 after five years because the present is more certain than the future. You could invest Rs. 75,000 in the market and earn a return on this amount. Rs. 1,00,000 at the end of five years would have less purchasing power due to inflation.

We hope you got the message that a rupee today is worth more than a rupee tomorrow. But the matters of money are not so simple. The time value of money concept will unravel the mystery of such choices that all of us face in our daily life.

In our day-to-day life, several investment decisions involve cash flow occurring at different points in time. Therefore, recognition of the time value of money is very important.

In this unit, you will learn about the time value of money and how it is calculated.

2.2 FUTURE VALUE

Future value (FV) is the value of a current asset at a future date based on an assumed rate of growth. The future value is important to investors and financial planners, as they use it to estimate how much an investment made today will be worth in the future. Knowing the future value enables investors to make sound investment decisions based on their anticipated needs. However, external economic factors, such as inflation, can adversely affect the future value of the asset by eroding its value.

Determining the FV of an asset can become complicated, depending on the type of asset. Also, the FV calculation is based on the assumption of a stable growth rate. If money is placed in a savings account with a guaranteed interest rate, then the FV is easy to determine accurately.

To understand the core concept, however, simple and compound interest rates are the most straightforward examples of the FV calculation. Future value is what a sum of money invested today will become over time, at a given rate of interest.

2.3 CALCULATION OF FUTURE VALUE

There are two types of future value calculations:

- The “future value of a lump sum” is the value of a single deposit, like a bank fixed deposit over time.
- The “future value of an annuity” is the value of a series of payments, like payment of insurance premium at regular intervals, over time. The term “annuity” refers to a series of payments of constant amounts.

The easiest way to calculate future value is to use one of the many free calculators on the internet, or a financial calculator app such as the HP 12C Financial Calculator available on Google Play and in the Apple App Store. Most spreadsheet programs have future value functions as well, but for the purpose of this course we are going to refer to present value, future value and annuity tables which are provided in this course.

The FV formula assumes a constant rate of growth and a single up-front payment left untouched for the duration of the investment. The FV calculation can be done one of two ways, depending on the type of interest being earned.

i) Using Simple Annual Interest

If an investment earns simple interest, then the FV formula is:

$$FV = P \times (1 + R \times T)$$

Where,

FV= Future Value

P = Principal amount or Investment Amount

R = Interest rate

T = Number of years

FV= Future value or final amount

For example, assume a Rs.1,000 investment is held for five years in a savings account with 10% simple interest paid annually.

In this case, the FV of the Rs.1,000 initial investment is $\text{Rs}1,000 \times [1 + (0.10 \times 5)]$, or Rs.1,500.

ii) Compounded Annual Interest

With simple interest, it is assumed that the interest rate is earned only on the initial investment. With compounded interest, the rate is applied to each period's cumulative account balance.

In the example above, the first year of investment earns $10\% \times \text{Rs}.1,000$, or Rs.100, in interest. The following year, however, the account total is Rs.1,100 rather than Rs.1,000; so, to calculate compounded interest, the 10% interest rate is applied to the full balance for second-year interest earnings of $10\% \times \text{Rs}.1,100$, or Rs.110.

The formula for the FV of an investment earning compounding interest is:

$$FV = P \times (1 + R)^t$$

Where,

P = Principal amount or Investment amount

R = Interest rate

t = Number of years

Using the above example, the same Rs.1,000 invested for five years in a savings account with a 10% compounding interest rate would have an FV of $\text{Rs}.1,000 \times [(1 + 0.10)^5]$, or Rs.1,610.51.

Future Value of an Annuity Example

A common use of future value is planning for a financial goal, such as funding a retirement savings plan. Future value is used to calculate what you need to save and invest each year at a given rate of interest to achieve that goal.

In general terms the future value of an Annuity is given has the following formula:

$$FVA_n = A[(1 + r)^n - 1]/r$$

Where,

FVA_n = Future Value of annuity

A = Constant Periodic flows

r = Interest rate period

n = duration of annuity

Example 1

If you contribute Rs. 2,400 every year to a retirement account and want to calculate what that account will be worth in 30 years; you could use the future value of an annuity formula. For this example, you assume a 7% annual rate of return:

$$FV = Rs. 2,400 \times [(1 + 0.07)^{30} - 1]/0.07$$

$$Rs. 2,400 \times [7.612 - 1]/0.07$$

$$Rs. 2,400 \times 94.461$$

$$Rs. 226,706$$

Over 30 years, you would contribute a total of Rs. 72,000, but because of the time value of money and the power of compounding interest, your account would be worth Rs. 226,706 (with an annual 7% rate of return), or more than three times the amount you invested.

Future value is also useful to decide the mix of stocks, bonds, and other investments in your portfolio. The higher the rate of interest, or return, the less money you need to invest to reach a financial goal. Higher returns, however, usually mean a higher risk of losing money.

The term $[(1 + r)^n - 1]/r$ is referred to as the future value interest factor for an annuity ($FVIFA_{r,n}$) and the value of this factor for several combinations of r and n can be found out from the annuity table.

Activity-2.1

1) What do you mean by Future value?

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2) You have deposited Rs. 10,000 in a fixed deposit in a bank at a 6% rate of interest. How much will you get after 5 years?

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2.4 PRESENT VALUE Vs. FUTURE VALUE

We can also measure the present value of money which is going to be received in future. Using it, you can calculate the worth of something today when you know its value in the future. This process is also referred to as "discounting" because, for any positive rate of return, the present value will be less than what it is worth in the future.

The interest rate used to calculate the present value of a future return cash flow is called the "discount rate." To illustrate present value, let's look at an example. The future value of Rs. 1,000 deposited for one year into an account earning an annual 2% interest rate is Rs. 1,020:

$$FV = 1000 \times (1+0.02)^1 = \text{Rs. } 1,020$$

We also know that the present value of that Rs. 1,020 is Rs. 1,000 because it's what we started with. Present value is the mirror image of future value.

The relationship between Present Value and Future Value $PV = FV_n \left[\frac{1}{(1+r)^n} \right]$. The factor $\frac{1}{(1+r)^n}$ is called the discounting factor or the present value interest factor ($PVIF_{r,n}$).

Some common uses for present value include:

- Calculating the value of pension annuity payments versus taking a lump sum
- Determining whether a business owner's investment will meet profit expectations.
- Valuing a business

2.5 TIME VALUE OF MONEY AND ITS SIGNIFICANCE

The time value of money is very important to all for financial planning, from the decision you make to buy or lease an asset to a financial decision to invest in new equipment. The future value determines the effect of time on money. Using future value and other measures can help you make sound financial decisions.

From the standpoint of financial management, the importance of time value of money can be seen as follows:

- i) For expansion and growth companies deploy a mix internal funds (equity and retained earnings) and external funds (debt). The time value of money will assist us in determining the impact and effect of debt owed by businesses on earning and profits.
- ii) Because the future is unknown, the time value of money is essential for managing funds and generating profits from a corporation.

The time value of money is significant because it can aid in financial decision-making. An investor, for example, has the option of choosing between two projects: Project 'A' and Project 'B'. The only difference between the two initiatives is that Project 'A' promises Rs.1 million cash reward in year one, while Project 'B' promises Rs.1 million cash payout in year five. If the investor does not grasp the time value of money, both projects may appear to be equally appealing. In reality, because Project 'A' has a higher present value than Project 'B', the time value of money mandates that Project 'A' is more appealing.

2.6 CALCULATION OF TIME VALUE OF MONEY

The Time Value of Money can be calculated in two ways. The following formula can be used to calculate the present value (PV) of future cash flows:

$$PV = FV \times (1 + r)^{-n} \text{ or } FV = PV \times (1 + r)^n$$

Where:

PV — Present Value.

FV — Future Value.

r — interest rate.

n — number of periods.

Notice the negative sign of the power n which allows us to remove the fractions from the equation. The following formula allows us to calculate the future value (FV) of cash flow from its present value.

$$FV = PV \times (1 + r)^n$$

Where:

FV — Future Value.

PV — Present Value.

r — interest rate.

n — number of periods.

Effect of Compounding Periods on Future Value

The number of compounding periods used in time value of money estimates can have a significant impact. If the number of compounding periods is raised to quarterly, monthly, or daily in the Rs.10,000 example above, the concluding future value calculations are:

- Quarterly Compounding: $FV = \text{Rs. } 10,000 \times [1 + (10\%/4)]^{4 \times 1} = \text{Rs. } 11,038$
- Monthly Compounding: $FV = \text{Rs. } 10,000 \times [1 + (10\%/12)]^{12 \times 1} = \text{Rs. } 11,047$
- Daily Compounding: $FV = \text{Rs. } 10,000 \times [1 + (10\%/365)]^{365 \times 1} = \text{Rs. } 11,052$

This demonstrates that the time value of money is determined not just by the interest rate and time horizon, but also by the number of times the compounding computations are performed each year.

In cases where we have more than one compounding period of interest per year, we can tweak the formula, to make sure we are using the appropriate portion of annual interest:

$$FV = PV \times \left(1 + \frac{r}{t}\right)^{n \times t}$$

Where:

FV — Future Value.

PV — Present Value.

r — interest rate (annual).

n — no. of periods (years).

t — no. of compounding periods of interest per year. If it is quarterly t=4, for half yearly t=2 and for monthly t=12.

The time worth of money is a key concept in determining Net Present Value (NPV), Compound Annual Growth Rate (CAGR), Internal Rate of Return (IRR), and other financial calculations.

The general formulas of the concept can be applied to any series of cash flows. One can use financial calculators or a spreadsheet program like Excel to calculate the metrics surrounding the time value of money. One can learn more about business functions or look for the following specific ones in the office Excel - PV, FV, IRR, NPV.

Selecting the appropriate rate of return is one of the most important aspects of the time value of money assessments (discount rate). Apart from interest on the debt, the Weighted Average Cost of Capital is a popular rate option (WACC). It is critical to understand that making the wrong rate decision will almost certainly ruin the entire procedure rendering it meaningless and can have a severely adverse impact on our decision-making process.

In practice, there are two sorts of the time value of money notions, which are described below:

i) Time Value of Money for a One-Time Payment

You invest INR 10000 for 5 years in a bank that offers 10% annual interest. You allow it to grow cumulatively.

After 5 years, you will have accumulated a total value of Rs.16,110.

The question now is whether Rs.10,000 is worth more than Rs.16,110. This is dependent on the rate of inflation, interest rate, and risk involved. It is a loss if the inflation rate rises. If the interest rate falls, then it is a gain.

ii) Time Value of Money -Doubling the Period

To calculate when the amount of money will double, consider another scenario. The rule of 72 is used to estimate the doubling period. Doubling period can be estimated by dividing 72 by interest rate. This is also known as rate of 72. For example, if you invest Rs. 10,000 for 5 years at an interest rate of 8%, it will take 9 years to double the present value of your money.

Example-1: Assume a sum of Rs.10,000 is invested for one year at 10% interest. The future value of that money is:

$$FV = Rs. 10,000 \times [1 + (10\%/1)^{1 \times 1}] = Rs. 11,000$$

The formula can also be altered to get the present-day value of the future total. For instance, the value of Rs.5,000 to be received after year's time, compounded at 7% interest, is:

$$PV = \frac{Rs. 5,0000}{[1 + (7\%/1)^{1 \times 1}]} = Rs. 4,673$$

Example-2:

We will use the following example to demonstrate the notion of the time value of money. We intend to invest in a machine that will provide us with annual cash flow of Rs. 38,500 for the next ten years. The device will cost Rs. 2,50,000 to purchase, and after its useful life has expired, we will be able to sell it for Rs. 1,40,000.

Time Value of Money – NPV Calculation (in Rs)**Investment Opportunity**

Initial CAPEX	2,50,000
Annual Benefit	38,500
Resale value of an asset after 10 years	1,40,000

We can build a simple schedule to represent our cash flows per period. To keep the example, compact we will assume inflation is at 0% over the period. We start with the initial CAPEX and list the cash benefit per annum.

Year	0	1	2	3	4
	31.12.2019	31.12.2020	31.12.2021	31.12.2022	31.12.2023
Cash out-flows (investment)	(250,000)				
Cash in-flows (incl. release value)		38,500	38,500	38,500	38,500
Net cash flow	(2,50,000)	38,500	38,500	38,500	38,500

5	6	7	8	9	10	
31.12.2024	31.12.2025	31.12.2026	31.12.2027	31.12.2028	31.12.2029	Total
						(2,50,000)
38,500	38,500	38,500	38,500	38,500	38,500+1,40,000	3,80,500
38,500	38,500	38,500	38,500	38,500	1,78,500	5,25,500

At the end of our table, cash inflow at the end of 10th year is Rs. 1,78,500 which includes Rs. 1,40,000 of resale of assets.

When we look at it in absolute terms, we can see that we will get back twice as much as we put in throughout the years. However, we must include the Time Value of Money to get a clearer understanding.

The company's Weighted Average Cost of Capital (WACC) can be used as a discount rate because it best represents the enterprise's real cost of capital. We can now compute the Net Present Value of the cash flows using Excel's more advanced NPV calculation.

Discount Factor (WACC)	10 %
Net Present Value (NPV)	40,622.5

The cash flows of Rs.38,500 here can be considered as an annuity of 10 years of Rs.38,500 and the resale value of Rs.1,40,000 is to be discounted to the present value.

Here we have to find the present value of an annuity of Rs.38,500 of 10 years tenure value occurring after 10 years. Here the discount factor is going to be the weighted average cost of capital (WACC) which is 10%.

Now putting the values in the formula

$$\text{Present value of annuity} = A \left[1 - \left(\frac{1}{1+r} \right)^{n/r} \right]$$

Where $\left[1 - \left(\frac{1}{1+r} \right)^{n/r} \right]$ is the present value interest factor from annuity ($PVIFA_{r,n}$). This value can be found from the present value interest factor for annuity for 10% discount rate and 10 years, and is 6.145. Therefore, present value of annuity of Rs.38,500 would be $6.145 \times 38,500 = 2,36,582.50$.

Now let us find the present value of Rs.1,40,000 going to be received ten years hence from now.

The present value in first factor for discount rate of 10% for 10 years is 0.386, therefore present value of Rs.1,40,000 is going to be:

$$1,40,000 \times .386 = 54,040$$

The present value of cash flows would be Rs. 2,36,582.50 + Rs. 54,040 = Rs. 2,90,622.50

The net present value would be:

$$2,90,622.5 - 2,50,000 = 40,622.5$$

Since NPV is positive investment can be accepted.

Example-3: Present Value of Uneven Cash Flows:

You may often get uneven cash flow streams. An example is a dividend on equity shares. Aman invests in a mutual fund that promises following cash flows for five years. The discount rate is 10%. Find the present value.

<u>Year</u>	<u>Cash flow (Rs.)</u>
1	1,000
2	2,000
3	2,000
4	3,000
5	3,000

First, see the present value table to the present value factor.

Year	Cash flows (Rs.)	P.V. factor	P.V. of each cash flow (Rs.)
1	1,000	0.9091	909.1
2	2,000	0.8264	1652.8

3	2,000	0.7513	1502.6
4	3,000	0.6830	2049.0
5	3,000	0.6209	1862.7
Total P.V.			Rs. 7,976.2

Example-4: Perpetuities:

When the cash flow is for an indefinite period, it is called perpetuity or CONSOLS. It is a special type of annuity. Its present value can be found by dividing cash flow by discount rate (Cash flow/ Discount rate). For example, if you get an offer of a perpetual cash flow of Rs 1000 every year and the return required is 16%.

The value of the perpetuity will be $(1000/0.16) = \text{Rs. } 6250$

It means if Rs. 6250 is invested at a 16% rate of interest, it would provide a yearly income of Rs. 1,000 every year.

Activity-2.2:

At the end of one, two, three, four and five years, an investor can expect to receive Rs.1,000, Rs.1,500, Rs.800, Rs.1,100, and Rs.400, respectively. If the investor's interest rate is 8%, what is the present value of this stream of irregular cash flows?

2.7 FINANCIAL DECISIONS - TIME VALUE OF MONEY

The discounted cash flow analysis (DCF), which is one of the most common and prominent approaches for appraising investment proposals, is based on the time value of money. It is also a necessary component of financial planning and risk management. It would be quite difficult to find a single key sector of finance that is not touched by the time value of money in some way.

The value of money is time-dependent, and is a fundamental principle in finance. The value of money received today is not the same as the worth of money received at a later date. The principle is based on the reality that we can invest and earn a return on what we receive today. For example, if you choose between Rs 100 now and Rs 100 in a year, Rs 100 now has more temporal value because it can be invested at a 10% rate of interest and receive a return of Rs 10. After a year, Rs 100 becomes Rs 110.

- a) Investment Decision:** Investment decision involves current cash outlay for an expected stream of cash inflows in the future.

Time	t_0	t_1	t_2	t_n
cash	Current	cash	cash	cash
flows	Cash outlay (Co)	inflow	inflow	inflow

The cash flows (outflows and inflows) take place at various times. As a result, they are not comparable. The present value of all cash inflows is calculated by discounting the cash inflows to get the time value of money. The PV of cash inflows is then compared to the current cash outlay or project cost.

For Example, A project costs Rs.1,00,000. It is expected to provide cash inflows as follows for 3 years. The company's cost of capital or required rate of return is 15%. Whether the project is acceptable?

Year	1	2	3
Cash Inflows	Rs. 40,000	Rs. 50,000	Rs.30,000

Solution:

$$\begin{aligned}
 \text{PV of Cash inflows} &= \text{PV of Rs 40,000} + \text{PV of Rs 50,000} + \text{PV of Rs 30,000} \\
 &= [40,000 \times 0.870] + [50,000 \times 0.756] + [30,000 \times 0.658] \\
 &= \text{Rs } 34,800 + \text{Rs } 37,800 + \text{Rs. } 19,740 \\
 &= \text{Rs. } 92,340
 \end{aligned}$$

The present value of cash inflows in this example is Rs 92,340, whereas the project cost is Rs 1 lakh. The project is not acceptable since the benefits are smaller than the costs.

- b) Financing Decision:** When a business issues a debenture, it receives immediate cash flow. At the end of each year, interest payments (cash outflows) are due. The debenture amount is redeemed after the period. As a result, cash inflows come first, followed by cash outflows in the financing choice.

Time	t_0	t_1	t_2		t_n
------	-------	-------	-------	-------	-------

These cash flows cannot be compared because they occur at separate times. Finding the discounted value (present value) of interest payments and the redemption value is used to calculate the time value of the payment. The present value of cash outflows is compared to the debenture selling value, and a decision is made on whether to issue debentures.

2.8 SUMMARY

In estimating the intrinsic value of shares and investment opportunities in companies and projects, the Time Value of Money idea is critical. Almost every piece of advice ever made, even if the person making it is not aware of it, is based on the time value of money notion. As a result of this principle, we understand that the earlier we begin investing, the better. Investing works because of the benefit of receiving money now rather than later, which is

based on temporal preference. Finally, the concept of money's time value has been articulated.

2.9 KEY-WORDS

Future Value: The value at some future time of a present amount of money, or a series of payments, evaluated at a given interest rate.

Net Present Value: The Present Value of an investment project's net cash flows minus the project's initial cash outflow.

Present Value: The current value of a future amount of money, or a series of payments, evaluated at a given interest rate.

Price/Earnings Ratio (P/E): The market price per share of a firm's common stock dividend by the most recent 12 months of earnings per share.

Compound Interest: Interest paid on any previous interest earned, as well as on the principal borrowed.

2.10 SELF-ASSESSMENT QUESTIONS

- 1 What do you mean by the Time Value of Money?
- 2 Explain the relevance of the Time Value of Money in financial decision-making.
- 3 Suppose you invest Rs.1,000. This first year the investment returns 12%, the second year it returns 6%, and the third year it returns 8%. How much would this investment be worth, assuming no withdrawals are made?
- 4 Mr. Harry has just bought a lottery ticket and won Rs. 10,000. He wants to finance the future study of his newly born daughter and invests this money in a fund with a maturity of 18 years offering a promising yearly return of 6%. What is the amount available on the 18th birthday of his daughter?
- 5 Given the uneven streams of cash flows shown in the following table, answer parts (a) and (b):

Cash Flow Stream (in Rs.)

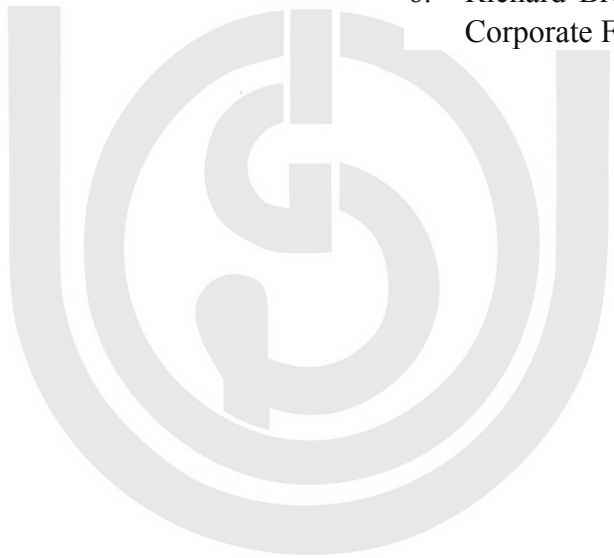
End of Year	A	B
1	50,000	10,000
2	40,000	20,000
3	30,000	30,000
4	20,000	40,000
5	10,000	50,000
Total	1,50,000	1,50,000

- a) Find the present value of each stream, using a 15 percent discount rate.

- b) Compare the calculated present values, and discuss them because the undiscounted total cash flows amount to Rs.150,000 in each case.

2.11 FURTHER READINGS

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UNIT 3 RISK AND RETURN

Objectives

The objectives of this Unit are to:

- Explain the concepts of Risk and Return
- Describe the genesis of total Investment Risk.
- Distinguish between 'Systematic' and 'Unsystematic' Risk.
- Identify the factors that affect Risk in Investment in Equity Shares.

Structure

- 3.1 Concept of Investment Risk
- 3.2 Evolution of Risk Connotations
- 3.3 Sources of Risk
- 3.4 Types of Risk
- 3.5 Measuring historical return.
- 3.6 Measuring historical risk.
- 3.7 Measuring expected return and risk.
- 3.8 Summary
- 3.9 Key Words
- 3.10 Self-Assessment Questions/Exercises
- 3.11 Further Readings

3.1 CONCEPT OF INVESTMENT RISK

The term 'risk' is commonly used in the investment sector. In everyday life, the word risk frequently connotes an unexpected negative outcome. When you say it is risk to drive on a certain route, you are implying that driving on that route could result in an accident. The term risk in the context of investments, on the other hand, has a different meaning. It not only denotes the possibility of a negative outcome but also the likelihood of a less positive outcome.

As you are aware risk and return are interrelated. A person purchases a financial asset with the intent of receiving a profit. The investment decision would be based on an 'anticipated return,' which may be realized or not. The risk associated with an investment decision is the possibility of an "unexpected" negative or "adverse" return.

Almost every decision involves some level of risk. When a manufacturing manager chooses equipment, a marketing manager creates an ad campaign, or a finance manager manages a portfolio of assets, they are all dealing with uncertain cash flows. The financial analysis includes assessing risks and incorporating their likely effect into financial decisions. The variability in return from security is described as a risk in theory. On the other hand, security that generates consistent returns over time and the returns are assured

based on some type of guarantee usually sovereign guarantee is referred to as a "risk-less security" or "risk-free security," whereas security that generates inconsistent returns over time is referred to as a "risky asset." Take a look at the following options, for example:

- ❖ Rs.1000, 12% 2020 Government of India Loan.
- ❖ Rs.100, 14.5% 2005 TISCO Non-Convertible Debentures.

The Government Loan would have zero risk because the government system does not collapse, and interest and principal repayments are guaranteed. In the case of TISCO debentures, here are protective covers in the shape of corporate assets and sustained solid financial performance, but there is a risk of poor performance and default.

For many investors, investment risk is a major source of anxiety. When a secondary market fails to respond to rational expectations, the risk component of such markets is rather large, and most investors are unaware of the true risk involved in the investment process. Risk aversion is a characteristic that many small investors have in the secondary market. Small investors, in particular, look to the market for a certain return, and when their expectations are not satisfied, it has a detrimental impact on their morale. As a result, these investors prefer to put their money into assets that will give them a small return on average rather than securities that may give them a large return on average but fluctuate wildly.

There are also risk-taking investors in the financial system. Speculators are risk-takers who choose to invest in securities that provide large returns even though the certainty of such returns is relatively low. In the market, they are also known as risk-takers. A secondary market requires both risk-takers and risk-averse investors.

In figure-3.1(i), an investor given the following investment options would surely pick investment 'B' over investment 'A'. Whereas in figure 3.1(ii), Investment 'A' provides a predictable income stream. Comparing Figures 3.1 (i) and 3.1 (ii), we find Investment 'B' is predictable in the figure 3.1(i) but variable in figure 3.1 (ii). The risk of a security is defined as the volatility in the flow of income to investors. Despite the danger in the second case, the investor's preference would still be for investment 'B' because it provides a better return almost every time. This can be interpreted as the investor is compensated with higher return for taking greater risk.

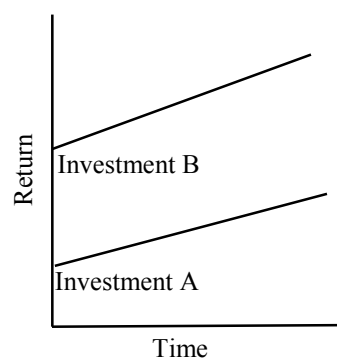
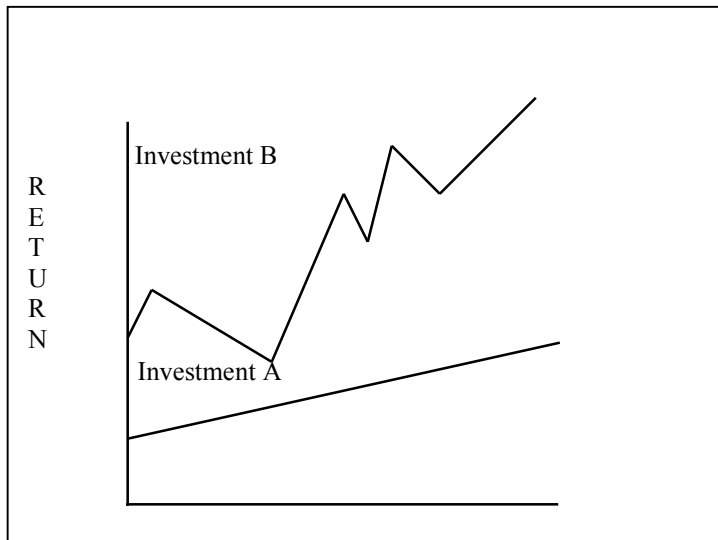


Figure 3.1 (i) Consistent Return



3.1 (ii) Fluctuating Return

Activity 3.1

a) Define risk.

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b) Can the risk of investment be considered without reference to return?

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3.2 EVOLUTION OF RISK CONNOTATIONS

In the twenty-first century, analysts would utilize financial statement data to assess the risk of a company's securities. They utilized the quantity of debt held by the company as a broad indication. Their rule was that the bigger the amount of debt, the riskier the securities. In the 1962 edition of their seminal work titled "Security Analysis," Graham Dodd and Cottle, who are considered pioneers of "security analysis" as a field, emphasized "margin of safety" as a measure of risk. They believed that security analysis should compute a security's "intrinsic worth," which is independent of its market price. 'The intrinsic worth of an asset would be the security analyst's own opinion based on its earning power and financial attributes, without reference to its market price,' they claim. The margin of safety was defined as the

difference between "intrinsic value" and "market price," and the risk assessment criterion was "the bigger the margin of safety, the lower the risk."

Other than the standard deviation, measurements such as range, semi-variance, and mean absolute deviation have been employed to assess risk. However, the standard deviation is widely accepted since it allows probability statements for a wide range of distributions. This 'total' is decomposed into multiple components by the investment risk, which can be done in two ways. The first is to divide total risk into systematic and unsystematic risk, and the second is to divide total risk into components, each of which has a causal force as its source.

Inflation, interest rates, market sentiment, and other pervasive risks can be divided into two categories: those that affect all securities to varying degrees, such as inflation, interest rates, and market sentiment, and those that are specific to a particular security, such as financial risk and business risk.

When return variability moves with the market, it is known as 'systematic risk'. Such a risk is impossible to eradicate, and it is a big source of anxiety for investors. When prices rise, for example, all enterprises are affected in terms of their expenses and realizations, which affect return variability. This will be a market phenomenon and would tend to stay for all. In calculating his projected rate of return, the investor would seek compensation for this risk factor.

Non-systematic risk, on the other hand, occurs when returns vary due to firm-specific factors such as failure to get a prestigious foreign contract or a higher exposure to the risk of default in payment of interest charges and debt obligations. This type of risk is not taken into account when calculating the expected or needed rate of return because it can be mitigated with a diverse portfolio.

3.3 SOURCES OF RISK

The risk associated with an investment is always a concern for an investor. He is confronted with several inquiries. To comprehend risk, S/he needs to be aware of the following:

- i) What makes investment risky?
- ii) What are the various elements or sources of risk that the investments are exposed to?

Variations in investment return can be attributed to a variety of factors. Each of these sources carries a certain amount of danger. We have mentioned above that there are various causes for future returns differing from predicted returns. Now, let us focus on understanding distinct risk sources. The following are the several sources of risk in investments:

i) Market Risk

Even though the company's earnings do not change, market prices of investments, particularly equity shares, may fluctuate in a short period.

The causes for this pricing change could be several. Investors' attitudes toward equities may change as a result of one or more factors, leading to a change in market price. The return on investment varies depending on the market price. This is referred to as market risk. Market risk is the variation in return caused by changes in the market price of an investment and arises as a result of investors' reactions to various key occurrences. The market prices of equity shares are affected by a variety of social, political, economic, and firm-specific events. Another aspect that influences market prices is market psychology. Market prices for all shares tend to rise during bull periods, while prices tend to fall during bear phases.

Business cycles have been discovered to be a primary driver of the timing and extent of bull and bear market periods. This would imply that the ups and downs in the stock market correspond to the economy's expansion and contraction cycles. Pessimism is triggered by a bear market, and prices plummet on a large scale. Although there may be exceptions, empirical evidence suggests that it is difficult for investors to avoid losing money in down markets. As stated earlier, market risk can be characterized as systematic or non-systematic. When a number of systematic forces cause the majority of stocks to rise during a bull market and decrease during a bear market, it is said to be a market situation called systematic market risk.

As is stated earlier, a small percentage of securities would be negatively associated with the current market trend. For example, firms which have been granted a valuable patent for gaining a profitable additional market share, may see their share prices rise despite the market's general gloom. Such unsystematic price swings are diversifiable, and the securities that are exposed to them can be managed with other shares, resulting in a diversified portfolio.

ii) Interest-Rate Risk.

The interest rate influences the return on securities in a variety of ways. Because investors always compare risk-free return with expected return on investment, it has an impact on the expected or required rate of return. When the interest rate rises, the expected or needed rate of return on other assets rises as well. Thus, the interest rates on risk-free (government) securities and the general rate of interest are linked. The rate of interest on other bond securities rises or falls in tune with the risk-free rate of interest. Interest rate risk refers to the variation in return induced by market price changes in fixed income products, such as bonds and debentures. The price of a security (bonds and debentures) is inversely proportional to the level of interest rates. Existing securities' prices decline when the interest rate rises, and vice versa. Changes in interest rates have a direct impact on bond and debenture prices, as well as an indirect impact on equity share values.

iii) Inflation Risk.

Inflation risk is the variability in the total purchasing power of an asset. It arises from the rising general price level. Thus, it refers to the unpredictability of the buying power of cash flows expected from an investment. It depicts how inflation or deflation affects an investment. Interest rates on bonds and debentures, as well as dividend rates on stock and preference shares, are expressed in money terms, and if the general price level rises in the future, the purchasing power of cash interest/dividend income will certainly drop. If the money rate of return is equal to the rate of inflation, the investor obtains a zero rate of return.

Many investors feel that, despite inflation, they will be better off if the market prices of their financial assets rise. After all, money is increasing, they argue. This is nothing more than a monetary delusion. Take, for example, a circumstance in which the market price of security you own doubles and the overall price level quadruples. Would you consider yourself to be wealthier just because your control over money has doubled as a result of selling the security? True, you get more money than before, but you can only buy so much with it. You cannot deny that, as a result of a four-fold increase in pricing in general, your control over goods and services (which is the ultimate goal of all investment decisions) has eroded. Thus, the risk of inflation originates from the uncertainty of the purchasing power of the money to be gained from future investments.

iv) Business Risk.

Business enterprises work in a constantly changing environment, which makes expected income to fluctuate. A change in government policy on fertilizer subsidies, for example, could harm a group of fertilizer companies. Similarly, a competitor's conduct, whether domestic or foreign, might have an impact on other businesses. While the aforementioned changes in the environment are the result of specific entities, several other elements alter the operational environment but can not be traced to a particular sources. For example, many businesses are affected by the business cycle, and their earnings fluctuate dramatically from one year to the next.

Steel, auto, and transportation companies are all affected by these business cycles. It might be difficult to determine if a company's risk is systematic or not. A diverse portfolio of assets from several industries can help to mitigate such company specific risk to a large extent. Portfolios with a few firms or companies from a few industries, on the other hand, would be vulnerable to such business risk if all sectors of the portfolio are affected by environmental changes.

v) Financial Risk.

When the company capital structure includes debt, financial risk occurs. Debt creates a fixed liability, which increases the income variability available to equity stockholders and it is not always a negative thing. It

will boost profitability when the company performs well, and stock investors receive a higher return than would otherwise be available. Because of the fixed liability, debt causes problems in poor times. If the company fails to satisfy its debt obligations, the managers will have to spend a significant amount of time convincing lenders to accept a delayed payment, wasting valuable managerial time in the process.

The default easily spreads negative information about the organization, and the corporation is plagued by problems on multiple fronts. It may be unable to obtain financing from suppliers, and some of its best employees may depart. Customers will also favor organizations with strong financials to minimize supply disruptions. However, until the loan is completely secured, too much debt causes challenges for even current debt security holders. Even in such circumstances, due to the lengthy legal process, seizing assets and selling them to fulfill their liabilities is challenging.

vi) Management Risk:

Management risk is the portion of total return variability caused by managerial actions in companies where the owners are not the managers. Regardless of how experienced the Management team is, there is always the risk of making a mistake or making the wrong decision. Owners-investors are rightfully enraged when executives are paid large salaries and bonuses and are given ego-boosting non-income spendings such as fancy automobiles and lavishly equipped offices, but their poor decisions put the company in serious trouble.

Management errors are the primary causes of the management risk component of overall investor risk. There are so many of them that it is difficult to keep track of them all, let alone classify them. Nonetheless, certain potential managerial blunders can be identified. Ignoring product obsolescence is one of the biggest mistakes that management can make. In reality, adequate R&D expenditures must be made, and alternative products must be promoted before the old ones' life cycle ends. Firms with a single product line will be more vulnerable to this risk than those with a diverse product range.

A company's reliance on a single large customer also may cause this risk. Many software firms are now dealing with this issue and are attempting to diversify their customer base as well as their geographic exposure. Another example of management mistakes could be how a correct choice is handled when it is unfairly criticized and even litigated in court. For example, a vehicle company produces a fuel-efficient tiny car well ahead of its time. Some zealous consumer advocacy group files a lawsuit because they perceive that user safety is being jeopardized. The company then announces the product's discontinuation, leaving investors to endure the loss of their capital as well as future revenue losses. Please keep in mind that these examples are merely examples, and the list might go on indefinitely.

Agency Theory and Management Risk:

The research that aims to understand the core motives of owners and managers is a recent trend in the field of explaining management risks. It has been said that owners work harder than managers who do not own a share of the company. Furthermore, because they are hired employees, non-owner managers have tremendous incentives to consume non-monetary perks.

According to the emerging view, owner-non-managers pass full authority to non-owner-managers, who then work as principal-agents. As a result, there is a conflict of interest between owners and managers, and the latter may abuse the authority entrusted to them to the owners' detriment. As a result, reasonable investors would pay a greater price for shares of owner-managed companies than for shares of employee-managed companies. The difference in prices between the two sets is known as the 'agency cost.' It should be noted that though the hypothesis has been criticized, it is becoming more widely accepted.

vii) Liquidity Risk

The inability of a seller to sell assets without offering price reductions and commissions is known as liquidity risk. It is simple to rate assets based on their liquidity. A country's currency unit is immediately saleable at par, with no requirement for a discount or other concessions. The next most liquid asset class is government securities and blue-chip stocks. Some tiny and lesser-known corporations' debt securities and equity shares are less liquid, if not illiquid. Due to lack of liquidity, investors are forced to sell securities at a lower price than the current price, especially when the quantity to be sold is significant. Therefore, when choosing securities, investors must consider the liquidity risk also.

viii) Social or Regulatory Risk:

The social or regulatory risk emerges when an otherwise successful venture is harmed by unfavorable legislation, a harsh regulatory environment, or, in the worst-case scenario, nationalization by a socialist government. Price controls may lower the revenues of industrial enterprises and rent controls may largely eliminate the value of rental property. The social risk is essentially political and thus unpredictable, but no industry can expect to be immune to it under a representative democracy based on rising government interference in corporate matters.

ix) Other Risks:

The monetary value risk and the political environment risk are two further categories of risk, particularly when investing in foreign assets. The investor who purchases foreign government bonds or securities of foreign firms in the hope of obtaining a slightly better yield than domestic issues, bear the calculated risk of:

- i) a change in the foreign government and repudiation of outstanding debt,

- ii) nationalization of business firms, that is, seizure by the government, or
- iii) the desire but the inability of the foreign government or corporation to handle its indebtedness.

When investing in international securities rather than domestic securities, the investor should carefully consider the higher risks associated with international investments against the projected return, which could be in the form of interest, dividends, or capital gains.

Risk Preferences:

Managers have different perspectives on risk (and firms). As a result, defining a generally accepted threshold of risk is critical. The three basic risk preference behaviors are: risk aversion, risk indifference, and risk-seeking.

Most managers are risk-averse, and they demand that any increase in risk be accompanied by an increase in reward. When it comes to taking risks for their company, they are more conservative than ambitious. As a result, a risk-averse financial manager is postulated, who demands larger returns for more risk.

Activity 3.2

- i) Choose a small and a medium/large company and go to their websites. After you have browsed the website, make a note of your impressions. Are you satisfied with the type of information offered on the website for investors? You can also go to a foreign company's website and compare the information offered there with that offered by Indian businesses.

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- ii) You are given four pairs of statements below. Indicate, for each pair, which

The statement is true, and which one is false.

- i) a) Default risk is always the risk of bankruptcy-----
 b) Default may end up in bankruptcy-----
- ii) a) Liquidity risk results from a situation when securities cannot be sold except at a price discount-----
 b) Liquidity risk arises when the volume of trading is low-----
- iii) a) Being, absentee-owners, investors, in general, are more likely to commit management errors-----
 b) Managers who do not own equity shares are prone to commit management errors and magnify management risks-----
- iv) a) The stronger among firms may be driven to a situation that makes default-----
 b) Bankruptcy does not spare even the financially strong firms -----

3.4 TYPES OF RISK

The first three types of risk in investments, namely market risk, interest rate risk, and inflation risk, are external to the firm and therefore cannot be managed. These are all pervasive and have an impact on all businesses. The business and financial risk, on the other hand, are controlled and internal to a certain corporation. Based on this analysis, the risk may be classified into systematic and unsystematic risk.

i) Systematic Risk.

The portion of return variability induced by factors impacting all enterprises is referred to as systematic risk. Diversification will not be able to mitigate such a risk. The following are some examples of systemic risk:

- The government changes the interest rate policy.
- The corporate tax rate is increased.
- The government resorts to massive deficit financing.
- The inflation rate increased.
- The Central Bank of the Country promulgates a restrictive credit policy.
- Government fails to attract FIIs.

ii) Unsystematic Risk.

The unsystematic risk is the variation in the return of an investment owing to factors that are specific to the firm and not to the market as a whole. Unsystematic, or unique risk, is a type of risk that can be completely mitigated through diversification. The following are some examples of unsystematic risk:

- Workers declare a strike in a company.
- The R&D expert of the company leaves.
- A formidable competitor enters the market.
- The company loses a big contract in a bid.
- The company makes a breakthrough in process of innovation.
- The government increases custom duty on the material used by the company.
- The company is not able to obtain an adequate quantity of raw material used by the company.

Total risk is equal to systematic risk + non-systematic risk because the two components are additive. In most cases, systemic risk is calculated by comparing the stock's performance to the market's performance under various scenarios. For example, if the stock appreciates more than other stocks in the market during a good period and depreciates more than other stocks in the

market during a poor period, the stock's systematic risk is more than the market risk.

The market's systematic risk is one, and systematic risk of all stocks is stated in terms of the market index's systematic risk. This is accomplished by measuring a value known as beta. When stock returns are regressed on market-index returns, the beta of the stock equals the beta of the regression coefficient. If a stock's beta is 1.50, it is likely to see a price increase of 1.5 times as compared to market return of 1. At the same time, if the market falls by a certain percentage in a terrible period, the stock is predicted to fall 1.5 times as much as the market.

Risk Vs. Uncertainty:

Although the terms risk and uncertainty are sometimes used interchangeably, their perceptions differ. Risk implies that a decision-maker is aware of the probable outcomes of a decision and its associated probabilities. Uncertainty refers to a scenario in which the likelihood of a particular occurrence is unknown. Investors strive to maximize Expected Returns while staying within their risk tolerance. The degree of risk depends upon the basis of the features of assets, investment instruments, and the mode of investment.

Causes of Risk:

Some factors, which can be stated to cause risk in the investment arena, are given below:

- Wrong method of investment,
- Wrong period of investment,
- Wrong quantity of investment,
- Interest rate risk,
- Nature of investment instruments,
- Nature of industry,
- Nature of business in which investment is made,
- National and international factors,
- Nature calamities etc.

3.5 MEASURING HISTORICAL RETURN

The total return on investment for a given period is:

$$\text{Total return} = \frac{\text{Cash Payment received during period} + \text{Price change over the period.}}{\text{Price of the investment at the beginning}}$$

The amount received throughout the period could be positive or negative. The difference between the ending price and the initial price is the rupee price change over time. This might be positive (the ending price is higher

than the beginning price), zero (the ending price is the same as the beginning price), or negative (the ending price is lower than the beginning price).

$$R = \frac{C + (P_E - P_B)}{P_B}$$

Where R = total return over the period

C = cash payment received during the period

P_E = ending price of the investment

P_B = beginning price

To illustrate, consider the following information for an equity stock:

- Price at the beginning of the year: Rs.70.00
- Dividend paid at the end of this year: Rs.5.00
- Price at the end of the year: Rs.80.00

The total return on this stock is calculated as follows:

$$\frac{5.00 + (80 - 70)}{70} = 0.214 \text{ or } 21.4\%$$

3.6 MEASURING HISTORICAL RISK

Risk refers to the possibility that the actual outcome of an investment will differ from the expected outcome. Alternatively, risk refers to variability or dispersion. If an asset's return has no variability, it is riskless. Suppose you are analyzing the total return of an equity stock over some time. Apart from knowing the mean return, you would also like to know about the variability in returns.

Variance and Standard Deviation:

The most commonly used measures of risk in finance are the Variance or its square root; the Standard Deviation. The variance and the standard deviation of a historical risk are defined as follows:

Standard deviation = $\sqrt{\text{Variance}}$

$$\sigma = \sqrt{\sigma^2}$$

$$\sigma^2 = \frac{1}{n-1} \sum_{i=1}^n (R_i - \bar{R})^2$$

Where, σ^2 = Variance of Return

R_i = return from the stock in period I (I=1,...,n)

$\bar{R}$ = average rate of return or mean of the returns

n = number of periods

σ = standard deviation

To illustrate, consider initial rate of return is 16% and the returns from a stock over 6 years period are:

The variance and standard deviation of returns are calculated as below:

Period	Return	Deviation ($R_i - \bar{R}$)	Square of deviation ($R_i - \bar{R}$) ²
1	16	16-10= 6	36
2	12	12-10= 2	4
3	20	20-10= 10	100
4	-13	-13-10= -23	529
5	15	15-10 = 5	25
6	10	10-10= 0	0
$\sum R_i = 60$		$\sum (R_i - \bar{R})^2 = 694$	

$$\sigma^2 = \frac{694}{6-1} = 138.8$$

$$\sigma = \sqrt{138.8} = 11.78$$

$$\text{Variance} = 138.8 \text{ and Standard deviation} = \sqrt{138.8} = 11.78$$

Looking at the above calculations, we find that:

- The squared difference between the distinct values and the mean values. This means that values that are distant from the mean have a significantly greater impact on standard deviation than those that are near to it.
- The square root of the average of squared variances yields the standard deviation. This means that the standard deviation and the mean are both expressed in the same units, allowing them to be compared directly.

3.7 MEASURING EXPECTED RETURN AND RISK

We have just looked at historical (ex facto) return and risk so far. Now we will discuss the predicted (ex-ante) return and risk.

i) Probability Distribution:

When you buy a stock, you understand that the return on your investment might be anything. For example, it could be 5%, 15%, or even 35%. Furthermore, the probability of these possible returns varies. As a result, you should consider probability distributions.

The likelihood of an event's occurrence is represented by its probability. Assume there is 80% possibility that the market price of stock A will climb in the following two weeks. This means that there is 80% likelihood that the price of stock A will raise in the next two weeks, and a 20% chance that it will remain unchanged.

<u>Outcome</u>	<u>Probability</u>
Stock price will rise	0.80
Stock price will not rise	0.20

Another illustration of the concept of probability distribution could be presented.

Consider the stock of Bharat Foods and the stock of Oriental Shipping. Based on the status of the economy, Bharat Foods stock could produce a return of 16%, 11%, or 06%, with certain probability associated with each. Based on the status of the economy, the second stock, Oriental Shipping stock, which is more volatile, might achieve a return of 40%, 10%, or -20% with the same odds. The following Exhibit shows the probability distributions of the returns for these two stocks:

State of Economy	Probability of Occurrence	Rate of Return (%)	
		Bharat Foods Shipping	Oriental
Boom	0.30	16	40
Normal	0.50	11	10
Recession	0.20	06	-20

You can compute two crucial parameters, the expected rate of return and the standard deviation of the rate of return, using the probability distribution of the rate of return.

ii) Expected Rate of Return:

The expected rate of return is the weighted average of all possible returns multiplied by their respective probabilities. In symbols:

$$E(R) = \sum_{i=1}^n R_i P_i$$

Where,

$E(R)$ = expected return from the stock

R_i = return from stock under state i

P_i = probability that the state i occurs

n = number of possible states of the world

From the above equation, $E(R)$ is the weighted average of possible outcomes – each outcome is weighted by the probability associated with it. The expected rate of return on Bharat Foods stock is:

$$E(R_B) = (0.30) (.16\%) + (0.50) (.11\%) + (0.20) (6\%) = 11.5\%$$

$$E(R_B) = .048 + .055 + .012 = 0.115 = 11.5\%$$

Similarly, the expected rate of return on Oriental Shipping stock is:

$$\begin{aligned} E(R_O) &= (0.30) (40\%) + (0.50) (10\%) + (0.20) (-20\%) = 13.0\% \\ &= .12 + .05 + (-.04) = .13 = 13\% \end{aligned}$$

iii) Standard Deviation of Return:

The dispersion of a variable is referred to as risk. The variance or standard deviation are usually used to calculate it. The sum of the squares of the deviations of actual returns from the expected return, weighted by the related probabilities, is the variance of a probability distribution. In terms of symbols,

$$\sigma^2 = \sum P_i \times [R_i - E(R)]^2$$

Where,

$$\sigma^2 = \text{Variance}$$

R_i = return for the i th possible outcome

P_i = Probability associated with the i th possible outcome

$E(R)$ = Expected return

Since variance is expressed as squared returns it is somewhat difficult to grasp. So, its square root, the standard deviation, is employed as an equivalent measure.

$$\sigma = \sqrt{\sigma^2}$$

Solution:

Taking expected return as 11.5%, we calculate:

Bharat Foods Stock						
State of the Economy	P_i	R_i	$R_i - E(R)$	$[(R_i - E(R))]^2$	$P_i [R_i - E(R)]^2$	$R_i P_i$
Boom	0.30	16	4.5	20.25	6.075	4.8
Normal	0.50	11	-0.5	0.25	0.125	5.5
Recession	0.20	6	-5.5	30.25	6.050	1.2
					$\Sigma = 12.25$	$\Sigma = 11.5$

$$E(R) = \sum_{i=1}^n R_i P_i = 11.5$$

$$\sigma^2 = \sum P_i (R_i - E(R))^2 = 12.25$$

$$\sigma = (\sum P_i (R_i - E(R))^2)^{1/2} = 3.5\%$$

Taking expected return as 13%, we calculate:

Oriental Shipping Stock						
State of the Economy	P_i	R_i	$R_i - E(R)$	$[(R_i - E(R))]^2$	$P_i [R_i - E(R)]^2$	$R_i P_i$
Boom	0.30	40	27.0	729.0	218.7	12
Normal	0.50	10	-3.0	9	4.5	5
Recession	0.20	-20	-33.0	1089.0	217.8	-4
					$\Sigma = 441$	$\Sigma = 13$

$$E(R) = \sum_{i=1}^n R_i P_i = 13.0$$

$$\sigma^2 = \sum P_i (R_i - E(R))^2 = 441.0$$

$$\sigma = (\sum P_i (R_i - E(R))^2)^{1/2} = 21.0\%$$

3.8 SUMMARY

The majority of investors are risk-averse and want to get the most out of their money while taking the fewest risks possible. The greater the risk that a person is willing to face, the greater is the potential reward. The investor analyses prior experience to estimate risk adapts it properly for projected future changes and then produces a subjective probability distribution of prospective returns from the proposed investment.

The expected value of the return and its variability are then estimated using this probability distribution. The expected value is given by the mean, while the variability, or standard deviation, is given by the variance or risk measure. The mean-variance technique is a commonly used method for measuring risk. The variance, often known as the standard deviation, is a measure of risk. It calculates overall risk and several factors that contribute to the total risk. To understand the impact of these components individually, a decomposition of total risk would be required.

When it comes to defining the elements that influence total risk, there are two major categories to consider; factors that produce non-diversifiable or systematic risk and factors that induce non-diversifiable or unsystematic risk. The first group includes factors such as interest rate fluctuations, inflation, and market mood (or bull-bear market), all of which have an impact on all businesses and can be measured to help determine the required rate of return. The causes such as the business environment, financial leverage, management quality, liquidity, and the risk of default would fall under the latter category. They have an impact on certain businesses but not on all. These sources of risk are unlikely to have a significant influence on a well-diversified portfolio, therefore, they are not worth worrying about.

3.9 KEY WORDS

Agency Theory: The documents, believe that managers are motivated to consume rather than work hard, as opposed to owners who are motivated to work hard. Delegation of authority to executives who manage on behalf of owners is the foundation of the objective decision-making process. The non-owner managers, according to agency theory are more prone to management errors.

Agency Cost: The difference in value between a firm controlled by executive delegates and one managed by owners, with the latter having a higher worth.

Coupon Rate Risk: The probability of the coupon rate of interest printed on the face of a debt security as a percentage of its face value being changed in successive short periods.

Diversifiable Risk: Variability of a return caused by factors that are unique to one or a few securities. Such variability is averaged out to zero in a diversified portfolio and can, therefore, be eliminated.

Default Risk: The variability of returns to investors caused by changes in the probability that the company issuing securities might default. Also known as financial risk and/or bankruptcy risk.

Liquidity Risk: The probability that securities will not be sold out for cash without price discounts and/or commission.

Non-Diversifiable Risk: Variability in the investor's rates of return arising out of common and macro-level factors like an economic downturn, general rise in prices. Increase in interest rates, and bull/bear phases of the securities market. All returns of securities are systematically affected by these factors. Hence, the risk is also known as 'systematic risk'.

Recession: A period when overall company activity drops during several months or even years.

3.10 SELF ASSESSMENT QUESTIONS

1. Differentiate between Expected Return and Realized Return.
2. What do you mean by risk? How is it different from uncertainty?
3. What are the sources of risk in an investment? Explain.
4. How the return of an investment can be measured? What are the elements of risk?
5. Explain the following terms:
 - a) Diversifiable interest rate risk
 - b) Liquidity risk
 - c) Market risk
6. Distinguish between
 - a) Financial risk and business risk
 - b) Diversifiable risk and non-diversifiable risk
 - c) Market interest rate risk and coupon rate risk
7. Prashanth is considering investing in a security that has the following distribution of possible one-year returns:

Probability of occurrence	.10	.20	.30	.30	.10
Possible return	-.10	.00	.10	.20	.30

 - a) What is the expected return and standard deviation associated with the investment?
 - b) Is there much "downside" risk? How can you tell?

8. You are thinking of acquiring some share of Sravya Limited. The rates of expectations are as follows:

Possible rate of return	Probability
0.06	0.20
0.11	0.40
0.08	0.10
0.12	0.30

Compute the expected return and risk on the investment?

3.11 FURTHER READINGS

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UNIT 4 VALUATION OF SECURITIES

Objectives:

The objectives of this unit are to:

- Explain the origin of and need for Valuation.
- Describe various notions of Value and Valuation Methodologies.
- Acquaint with the broad Approaches to Valuation.
- Understand the intricacies of valuation of Fixed-Income Securities.
- Discuss the most Common Valuation Models used for Preference and Equity Shares.

Structure:

- 4.1 Introduction
- 4.2 Genesis of Valuation
- 4.3 Need for Valuation.
- 4.4 Various Expressions of Value
- 4.5 Business Valuation Approaches
 - 4.5.1 Income Approach
 - 4.5.2 Market Approach
 - 4.5.3 Asset Approach
- 4.6 Investment Decision - Required Rate of Return
- 4.7 The Three-Step Valuation Process
 - 4.7.1 Economy Analysis
 - 4.7.2 Industry Analysis
 - 4.7.3 Company Analysis
 - 4.7.4 Empirical Support for the Valuation Sequence
- 4.8 The General Valuation Framework
 - 4.8.1 The Basic Valuation Model
 - 4.8.2 Value Price Relationship
 - 4.8.3 The Cootner Hypothesis
 - 4.8.4 The Dynamic Valuation Process
- 4.9 Valuation of Fixed-income Securities
- 4.10 Valuation of Preference Shares
- 4.11 Valuation of Equity Shares
- 4.12 Summary
- 4.13 Key Words
- 4.14 Self Assessment Questions/Exercises
- 4.15 Further Readings

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4.1 INTRODUCTION

The goal of a valuation is to figure out how much a company's equity or net operating assets are worth. Any valuation considers the current value of some future flow, such as a dividend, cash flow to stockholders, free cash flow, abnormal earnings, or abnormal operating income. The future is divided into two parts: an explicit forecasting period during which the analyst calculates the present value of a flow generated by a set of projected financial statements derived from the prospective analysis, and a post-horizon period during which the analyst makes a simplifying assumption about the flow's growth.

The evaluation of the value of various assets, tangible or intangible, securities, liabilities, and a specific business is known as valuation. The term "value" refers to a thing's material or monetary worth, which can be calculated using a medium of trade. An understanding of a variety of factors, as well as professional judgment and experience, are required for a business assessment. This includes recognizing the valuation's objective, value drivers, and an awareness of industrial, competitive, and economic aspects, as well as selecting and applying the best valuation processes and procedures. Following the privatization of state-owned firms, valuation has been a subject of political and economic conflicts.

4.2 GENESIS OF VALUATION

There may not be a definitive valuation method or a definite value result in every case, but each valuation is solely based on the circumstances. The proper valuation necessitates a rational and methodical approach as well as the careful application of fundamental principles. This means that there may not be a set format or approach that must be followed at all times. Company's as they expand becomes more complex both in terms of structure and the instruments they use to raise and deploy finances. Similarly the overall cash flows constitute many sub cashflows from products and services. The company's financial statements which are one of the main source of information required for valuation should be elaborate and comprehensive for application in valuation exercise. The business valuation must be more of a science than an exercise in guesswork.

A good valuation exercise has the following characteristics:

- a) A fair and reasonable value conclusion
- b) Using persuasion techniques to arrive at a value conclusion.
- c) The valuation procedure is transparent.
- d) A realistic assessment of the aspects that influence the valuation
- e) Ensuring unbiased considerations and avoiding shortcuts
- f) Validation under a critical scrutiny
- g) Thorough work by a team of experts from a variety of fields, including finance, accounting, economics, engineering, and investment banking.
- h) A thorough and complete valuation report that supports the fairness of the opinion and is accepted as expert testimony.

Everyone has an opinion on the worth of a company, a tangible asset, or an intangible asset, yet the term "value" has varied meanings for various people. The difficulties that valuers encounter are considerable. They must present a suitable definition of value for a particular valuation. Both quantitative and qualitative physical and intangible variables must be considered when valuing a full or partial entity. The valuer or appraiser must have specific market knowledge, education, and training to determine the value of specific tangible assets. To do a good valuation, the valuer must acquire opinions and information from specific sources such as the construction, efficiency, power consumption, risk of obsolescence, future economic use considerations, and so on.

4.3 NEED FOR VALUATION

Because business valuation is so important, a business owner or individual may need to know how much a company is worth. A business valuation is a difficult financial analysis that should only be performed by a certified valuation expert with the necessary credentials. Typically, the most popular source of determining the value of shares is a stock exchange, particularly for transactions involving small blocks of shares that are traded on stock exchanges. However, stock exchange prices are unreliable since they are decided daily by demand and supply, which are impacted by variables outside the business. The huge changes in stock exchange values are the result of private and institutional investors' activities and opinions from all around the country, and indeed the world.

4.4 VARIOUS EXPRESSIONS OF VALUE

The term value can be defined in a variety of ways, as detailed below:

- a) **Fair market value** is defined as the amount, price, highest price, most likely price, cash, or equivalent price at which property would change hands or ownership might be justified by a prudent investor, or at which a willing buyer and seller would exchange, would agree to exchange, have agreed to exchange, should agree to exchange, or could reasonably be expected to exchange. Fair market value without discount is also referred to as fair value. Fair value is a statutory phenomenon in most nations, and it pertains to the valuation rights of disgruntled shareholders. Minority shareholders believe they are being compelled to get less than sufficient consideration for their stock in the event of corporate mergers, sell-offs, and the like.
- b) **Book value**, also known as shareholders' equity, net worth, and net book value, is the historical value. It is the difference between a company's total assets and total liabilities on a given date as shown on its balance sheet. Assets are reported at historical costs on any balancing statement, while liabilities are reported at face value, net of cumulative depreciation.
- c) **Intrinsic value** is the value of a security, such as stocks, that is estimated based on all facts and circumstances of the business or investment. It is

defined by the amount of money earned and the quality of the money earned. The investment's earning potential is determined by the underlying entity's potential to grow, its rate of return over time using reasonable assumptions such as internal resources, external economic data, and benchmarks. In a nutshell, intrinsic value is the present value of a future stream of earnings discounted at the current market yield.

- d) **Replacement value** is the current cost of acquiring a comparable new property with the closest equivalent usefulness to the property being appraised. A replacement cost estimate evaluates how an asset would be replaced with more modern materials and technologies. The reproduction value, which is the cost of a duplicate asset based on current prices, is not the same as the replacement value. The replacement value and reproduction cost are used to value non-producing tangible assets like furniture and fixtures, office equipment, and so on.
- e) The **liquidation value** is the net amount that can be realized if the firm is shut down and the assets are liquidated individually. Orderly liquidation and forcible liquidation are the two types of liquidation value. Orderly liquidation is when assets are sold over a fair length of time to maximize the cash collected. Forced liquidation value, on the other hand, is created when assets are sold as rapidly as feasible. Some companies are worth more when they are dead than when they are living. As a result, it is critical to understand whether the going concern value exceeds the liquidation value or vice versa.

4.5 BUSINESS VALUATION APPROACHES

Accurate valuation necessitates the proper application of existing methodologies to value determination, a clear grasp of the actual investment in a firm being sold or purchased, and a clear evaluation of the company's returns. The operations of the company, the markets it serves, and the assets it owns are all different. As a result, the body of knowledge on business valuation has created three major methods to business valuation. The following are the three types of business valuation approaches:

- a) Income approach
- b) Market Approach
- c) Asset Approach

4.5.1 Income Approach

The income business valuation technique is based on the concept of valuing future benefits in their present value. This method calculates the worth of a company by considering future earnings throughout time. The **capitalization of earnings approach** and the **discounted earnings technique** are two of the most common methodologies utilized by business valuation professionals.

- a) **Earnings Capitalization Method:** The capitalization approach divides the predicted earnings of a corporation by the so-called "capitalization rate." When it looks that a company's existing operations are indicative

of its future activities, this strategy is more acceptable, provided, of course, a normal growth rate. To arrive at an operating value for the firm, a stable level of earnings is divided by a capitalization rate using this procedure. The capitalization rate is equal to the net earnings discount rate minus the average sustainable growth rate when net earnings are capitalized.

- b) **Discounted Cash flow Method:** This method expresses the business's present value as a function of its future cash earnings capability. After all operational expenses, taxes, and essential investments in working capital and capital expenditure are fulfilled, the appraiser assesses the cash flows of any organization using this procedure. When future returns are projected to be significantly different from current operations, this strategy is more suited. To arrive at current values, all future cash flows are anticipated and discounted using the cost of capital. The net present value, which is taken as the value of the cash flows in issue, is the sum of all future cash flows, both incoming and exiting.

$$\text{PV of future sum} = \frac{\text{FV}}{(1+r)^n}$$

Or

$$= \text{FV} \times \text{PVF}(r,n)$$

Where,

$$\text{PVF}(r,n) = \frac{1}{(1+r)^n}$$

PV of a series of equal future cash flows or annuity = annuity amount $\times$ PVAF (r,n).

Example: Assume that a deposit is made into an account that will earn 8% compounded annually. It is desired to withdraw Rs. 5,000 three years from now and Rs. 7,000 six years from now.

What is the size of the deposit that will produce these future payments?

Solution:

$$\begin{aligned} \text{PV} &= \text{FV} \times \text{PVF}(r,n) = \text{Rs. } 5,000 \times \text{PVF}(8\%,3) + \text{Rs. } 7,000 \times \text{PVF}(8\%,6) \\ &= \text{Rs. } 5,000 \times (0.794) + \text{Rs. } 7,000 \times (0.630) \\ &= 3,970 + 4,410 = \text{Rs. } 8,380.2 \end{aligned}$$

4.5.2 Market Approach

The market approach is the concept of determining a company's value by comparing it to the market value of similar publicly traded enterprises. The substitution idea is also used in the market business valuation methodology. To compare the similar business, the business valuation specialist discovers business firms that have transacted. The comparison is based on various financial ratios or multiples of the equities in question to those of its rivals, such as price to book value, price to earnings, EV/EBITDA, and so on. This

strategy, is a means of establishing the appraisal value of an asset based on the selling price of similar assets is popular as a strategic tool in the financial business. The market approach is a business valuation strategy that can be used to determine the value of the real estate or as part of the process of valuing a closely held company.

4.5.3 Asset Approach

The asset method is founded on the substitution principle, which states that a sensible buyer will not pay more for a property than the cost of acquiring a comparable substitute property. It is a sort of business valuation that looks at a company's net asset value, or the fair market value of all of its assets minus all of its liabilities, to figure out how much it would cost to start over. In terms of determining which of the company's assets and liabilities to include in the valuation and how to quantify their worth, the asset approach leaves some room for interpretation.

The net asset value is equal to the total value of a company's assets minus the total value of its liabilities. The conventional method for calculating net assets per share is to divide net assets by the number of shares outstanding. In the same manner that the price-earnings ratio measures profit per share, this represents the asset value that belongs to each share. The net asset value is useful for valuing stocks in industries where the company's worth is derived from its owned assets rather than the profit stream created by its operations.

4.6 INVESTMENT DECISION - REQUIRED RATE OF RETURN

Investment is a long-term commitment of funds to earn a rate of return that compensates investors for the time the funds are unavailable for consumption, the predicted rate of inflation over the investment period, and the risk involved. Because the goal of investing is to generate a profit, investors must first define their intended rate of return before deciding whether the expected rate of return is equal to or greater than the desired or required rate of return. The needed return rises in tandem with the level of investment risk, once the desired or required rate of return is identified.

The estimated return on investment is the second phase in making an investment decision. This is usually done by comparing the initial investment required to purchase a financial asset with the asset's recurring cash flows. The assessment of expected return is quite simple in some circumstances, such as savings bank accounts or investments in fixed deposits or corporate bonds, because the issuer of the security discloses the cash flows available from such assets. As a result, deciding on such investments is easier than deciding on equity shares. Investors who invest in equity shares must estimate cash flows based on the firm's predicted performance over the investment period. In the investment decision-making process, this is the most complicated job. Now, we will look at how an investor can tackle the difficult task of forecasting future cash flows.

4.7 THE THREE-STEP VALUATION PROCESS

We discussed how to make an investment decision by comparing the expected or estimated return to the needed rate of return in the previous section. This investing decision is similar to any other purchase you make in your daily life. For example, when you go to a fruit store to buy apples or an automobile dealership to buy a car, you always evaluate the price to the value, which you are going to receive by such purchases.

When making an investment decision, there are two broad ways to valuation: (i) the top-down, three-step strategy, and (ii) the bottom-up stock valuation, stock selection approach. The perceived importance of the economy and industry on individual enterprises and stocks differs between various methods. The three-step technique assumes that the economy and industry's performance has a significant impact on a firm's revenue, thus the first step in the valuation process is to look at the economy and industry and their impact on the firm's cash flow. The bottom-up strategy, on the other hand, thinks that, regardless of the market, it is possible to uncover stocks that deliver greater returns as compared to industry outlook.

We will largely explore the three-step technique in this unit. In this technique, the economy's performance is initially investigated to comprehend its impact on the industries. After picking the industries, the study continues to individual equities to look at the prospects of companies in the chosen areas. As a result, the three-step technique is also known as the E-I-C (Economy-Industry-Company) strategy. The E-I-C strategy is depicted in Figure-4-1.

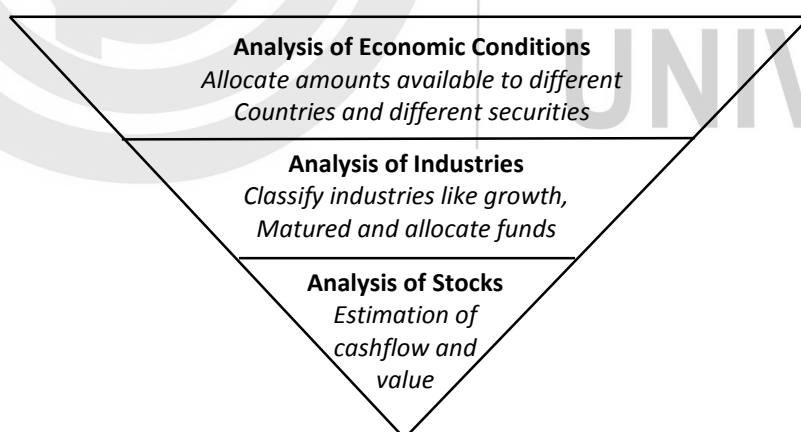


Figure-4.1: The Investment Process (E-I-C Approach)

4.7.1 Economy Analysis

Every business is a component of the larger system known as the "general economy," which has ups and downs. It makes sense to start the appraisal process with macroeconomic estimates. The large number of forces that affect the "general economy" is something you should be aware of. In just a few instances, fiscal policy has an impact on expenditure both directly and

indirectly through multiplier effects. Tax cuts, for example, might encourage spending while extra income tax or product taxes can discourage it. Similarly, a rise or fall in government expenditures has an impact on the economy. Increases in road construction, for example, increase demand for earthmoving equipment and concrete materials. Furthermore, the increased consumer spending will be fueled by the jobs created in road building, earthmoving equipment manufacture, or concrete materials manufacture. As a result of the multiplier effect, many investors and experts believe that government spending on planned expenditures is crucial for industrial development.

The supply and cost of cash accessible to business units are influenced by monetary policy. A restrictive monetary policy, for example, reduces the money supply and consequently the availability of working capital to businesses. As a result of this policy, interest rates rise, raising the cost of capital for businesses and raising the needed rate of return for investors, in the short term however restrictive monetary policy will lower inflation and, as a result, the required rate of return will decrease in the medium and long term. As a result, monetary policy has an impact on all aspects of the economy as well as the economy's relationships with other economies.

Political uncertainty, war, the balance of payments crises, exchange rates, monetary devaluations, world opinion, and a variety of other international issues all have an impact on the economy's performance. It is difficult to imagine any industry or business escaping the effects of macroeconomic events that influence the entire economy. A well-informed investor will seek to forecast the economy's future path first. If his forecasts predict a boom, the investor should focus on industries that are most likely to gain from the projected period of prosperity.

On the other side, if the prognosis is bleak or a recession is on the horizon, investors should postpone stock purchases or hunt for companies, known as defensive industries that are less influenced by the economy's poor performance and investment inequities. In such circumstances, it is preferable to invest in fixed income instruments, particularly government assets. As a result, economic analysis assists investors in allocating available excess funds among various forms of assets (such as government bonds, corporate bonds, and stocks) and selecting businesses that are predicted to perform well in a particular economic environment. Investors operating in many countries, such as Foreign Institutional Investors (FIIs), might utilize economic analysis to allocate capital to different countries based on the economic prospects.

4.7.2 Industry Analysis

Changes in the economy do not affect all industries equally, and business cycles do not affect all industries at the same time. Defense-related firms' earnings would diminish under an international context of peace treaties and the end of the cold war, for example. In general, the construction industry's recovery lags behind the economy. Similarly, an economic boom or expansion is unlikely to assist industries that are exposed to foreign product obsolescence competition. Because buyer firms often boost capital spending when they are running at full capacity, the equipment manufacturing business

will fare well towards the conclusion of the economic cycle. The cyclical industries, like steel and automobiles, often perform better than aggregate economies during expansions but suffer more during downturns. Non-cyclical businesses such as food processing or pharmaceuticals, on the other hand, would exhibit no significant growth or decrease during economic expansion or downturn.

The prospects of an industry in a global business climate will, in general, influence how well or poorly an individual firm will fare. As a result, market research should come first. A poor firm in a thriving market might pay off more than a leader in a sagging or declining market. Of course, the investor would go through a continual search process to identify the top companies in strong industries and reduce the search area for investment opportunities. Investors can utilize industry analysis to allocate funds to different industries based on their future potential and current valuation.

4.7.3 Company Analysis

An investor can study and compare the performance of individual businesses within the industry after evaluating the industry's forecast, which is positive. This entails looking at the company's past performance, its position in the industry, and its future potential. The last is crucial for estimating cash flows and, as a result, value. It should be highlighted that a good stock or bond for investment does not have to originate from the finest firm or market leader in the field, since their stock or bond may be completely priced or overvalued, with no room for additional return. As a result, rather than seeking organizations that are the finest in their respective industries, investors always hunt for organizations that are undervalued for investment and have high growth prospects.

4.8 THE GENERAL VALUATION FRAMEWORK

The majority of investors monitor price changes in the stock market. They see capital gains chances in such moves. Everyone wishes they could accurately foresee them and maximize their profits. Few investors, on the other hand, understand that price dictates value and that both alter at random. This method would be beneficial to a wise investor to be aware of.

This procedure is examined in depth in the following section. We begin with a brief overview of the basic valuation model before moving on to analyze the relationship between value and price through investor-market action. We will also discuss active and passive investment strategies before determining the dynamic valuation model.

4.8.1 The Basic Valuation Model

The present value of an asset's predicted returns equals its value. This is especially true if you anticipate that the asset you own will generate a steady source of income over time. The value of a security is likewise defined by this concept of valuation. You must discount the stream of cash flows at your needed rate of return to convert this anticipated stream of return into a

security's value. This method of value evaluation necessitates:

- a) an estimated stream of projected cash flows and
- b) the required rate of return on investment. Because of the variances in risk levels associated with securities, the needed rate of return differs from security to security.

You may always calculate the present value of security using a risk-adjusted discount rate and the future expected profits flow in the form of interest, dividend earnings, or cash flow

$$PV = \frac{CF_1}{(1+r)} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \dots + \frac{CF_n}{(1+r)^n}$$

Where,

PV = Present value

CF = Cash flow, interest, dividend, or earnings per period up to 'n' number of periods.

r = risk-adjusted discount rate (generally the interest rate)

The model appears simple when expressed in the above fashion. However, practical difficulties make the model's use more difficult. For example, it is unlikely that every market participant accurately gauges the value of cash flows and the risk-adjusted needed rate of return. Furthermore, investors' expectations for risk compensation may differ from one another. A little change in these variables will result in a change in value. As a result, it is possible that no single value can be generated. You will notice that market actions with a range of values become laborious. Further, return, risk, and value all tend to fluctuate over time.

Asset prices may rise or fall in response to purchasing and selling pressures (supplied securities remain constant), affecting capital gains and thus expected returns. As a result, future income predictions will need to be changed, and values will need to be updated. Similarly, the security's risk profile may evolve. The company may over borrow (putting itself in financial danger) or embark on a risky enterprise (and face operating risk). A rise in risk would cause the discount rate to rise, lowering the value and therefore, it appears to be a never-ending process. Every new piece of information will have an impact on prices, and the buying and selling pressures that keep prices moving will continue to push them closer to new levels. This dynamic valuation model with ever-changing information inputs is depicted in the final portion of this section.

4.8.2 Value-Price Relationship

The price is determined by the present value, often known as inherent value or economic worth. This has already been stated. But how can this occur? In the preceding paragraph, a hint to the answer to this question was given. You should have mentioned the importance of 'buying and selling pressures,' which push prices closer to their true worth. Now you might wonder, "What are these pressures, and how do they occur?" You will see how such

pressures are sparked by 'investor action' in the wake of valuation adjustments. As you may recall, investment techniques can be either passive or active. Following that, investors and investment managers can be divided into two categories: passive and active. It is worth noting that active investors are the primary source of purchasing and selling forces. They also adhere to certain game regulations, which are stated below:

Rule-1: When value outweighs the price, it is time to buy. This emphasizes the idea that stocks are undervalued, making it a good deal to buy now and sell later when prices rise to their fair value.

Rule-2: When the value is less than the price, it is time to sell. In a situation like this, shares would be expensive, and it would be better to sell them now rather than later when the price drops to the value level.

Rule-3: When price and value are equal, do not trade. This is a state in which the market price is stable and unlikely to change.

4.8.3 The Cootner Hypothesis

Cootner provides another layer to the overall picture of investor behavior and buy-sell forces. This hypothesis divides active investors into two categories: "professional investors" and "unsophisticated investors." Even before the news reaches the uninformed investors, the professional investors are resourceful enough to discover it and establish estimates of intrinsic worth. As a result, they will be the first to take market action whenever a value-price mismatch is detected. Unsophisticated investors, such as quick speculators acting on hot tips, would not receive any news other than public news and would lack the ability to comprehend even public news. They will operate in the market, but this will be incompatible with actual changes in intrinsic worth.

For example, some of them may have received retirement benefits and are eager to invest in stocks and bonds. Regrettably, such action may be required at a time when the price is more than value. Similarly, some investors may be forced to sell shares held by them to finance a family wedding, even if the price is already below the intrinsic value. It is self-evident that the actions of inexperienced investors would stifle the trading pressures required to correct the value-price misalignment. Professional investors re-enter the picture and pocket big profits even while seeking to realign the errant prices to intrinsic values only when their illogical conduct leads prices to significant "highs" or "lows."

By emphasizing the state of continuous equilibrium, Paul Samuelson has added to the Cootner formulation of the value model. When prices adjust to values at a rapid rate, a situation like this arises. Perfectly efficient pricing, which is assumed to reflect all information, are those that adjust prices to vibratory values in real-time. Security with perfectly efficient prices would be in continuous equilibrium.

4.8.4 The Dynamic Valuation Process

By now, you should be aware of the dynamic nature of valuation. Estimates of present value, riskiness and discount rates, future income, and buy-sell

activity must all be reassessed regularly as new bits and pieces of information become available.

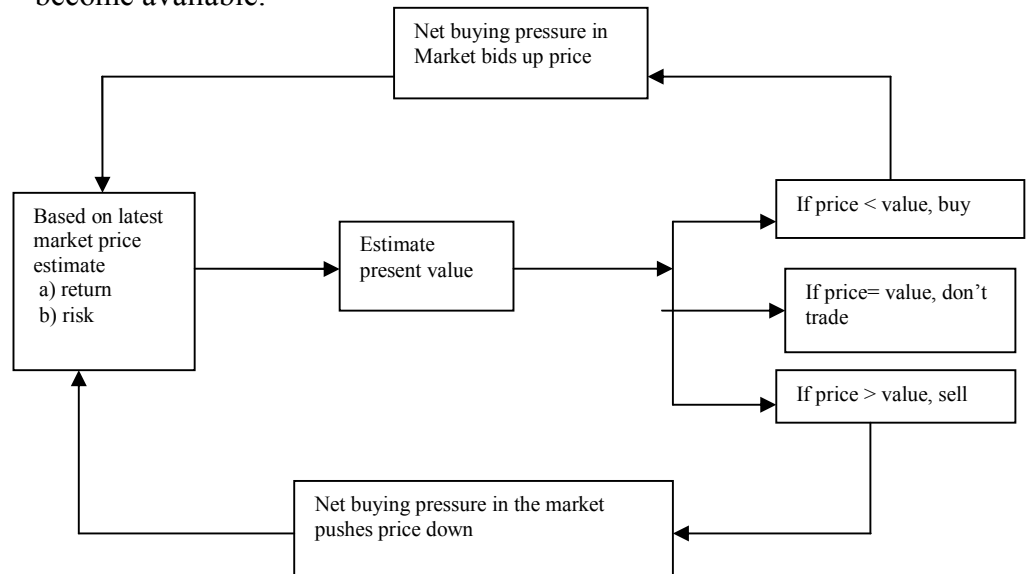


Figure-4.2: The Dynamic Valuation Model

The dynamic valuation process, seen in Figure-4.2, is a never-ending occurrence. Using the present value approach, the investors begin by estimating intrinsic value. They purchase, sell, or do not trade as per the trading regulations. Buying and selling forces are created as a result of this process, and prices rise or fall. In either instance, the most recent market price reacting to buying/selling pressures will have an impact on the future.

Activity-4.1:

1. Indicate if the following statements are; True or False.
 - a) Perfectly efficient prices reflect all information (True/False)
 - b) Continuous equilibrium is a state when the action of professional investors brings prices closer to intrinsic value. (True/False)
 - c) The discount rate used to estimate present values is the risk-adjusted interest rate. (True/False)
2. In terms of Sales, Assets, and Profit, A Ltd. and B Ltd. are close to each other, but the market price of these shares differs substantially. Can you list down any three important reasons for the difference?

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.....

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.....

4.9 VALUATION OF FIXED INCOME SECURITIES

Fixed-income securities are debt securities issued by governments, government and quasi-government entities, and private businesses. The most

common examples of these are bonds and debentures.

The present value of a bonds or debentures predicted cash flows determines its intrinsic value. The coupon interest payments and principal repayment are known, and the present value is calculated over counting the issuer's future payments at a suitable discount rate or market yield. The following equation in the normal way:

$$PV = \sum_{i=1}^n \frac{C}{(1+r)^i} + \dots + \frac{C}{(1+r)^n} + \frac{TV}{(1+r)^n} \dots\dots\dots(1)$$

Where,

PV = the present value of the security today (i.e., period zero)

C = coupons or interest payments per period 't'

TV = the terminal value repayable at maturity; this could be a par, premium, or even at discount (in extraordinary cases)

r = the appropriate discount rate or market yield

n = the number of years of maturity

The above implicit valuation mechanism of the equation can be demonstrated with the help of an example.

Consider the case of a bond-A having face value of Rs. 1,000 and a five-year maturity at par yielding 10%. The interest is paid once a year the bond's value would be as follows:

$$\begin{aligned} PV &= \frac{Rs.100}{(1+.10)} + \frac{Rs.100}{(1+.10)^2} + \frac{Rs.100}{(1+.10)^3} + \frac{Rs.100}{(1+.10)^4} + \frac{Rs.100+Rs.1,000}{(1+.10)^5} \\ &= (100 \times .9091) + (100 \times .8264) + (100 \times .7513) + (100 \times .6830) + (1100 \times .6209) \\ &= 90.91 + 82.64 + 75.13 + 68.30 + 682.99 \\ &= 999.97 \text{ or Rs. 1,000 approx.} \end{aligned}$$

Because the bond was just sold at par, you should notice that the present value of the bond, i.e., Rs. 1,000, which is equal to the issue price.

Consider a bond (Bond-B) having a face value of Rs. 1,000 and a coupon of 6% that was issued five years ago. The bond has a ten-year maturity period so there are still five years to go until it is fully repaid at par. As before, the current discount rate is 10%. Bond-B is similar to Bond A except for the interest rate. The current value of bond-B will not be Rs. 1,000 since investors will refuse to pay this price and instead agree to earn Rs. 60 per year in interest for the next five years while bond-A with identical qualities delivers yearly interest payments of Rs. 100 for the same period. Bond-current B's value will be calculated as follows:

$$\begin{aligned} PV &= \frac{Rs.60}{(1+.10)} + \frac{Rs.60}{(1+.10)^2} + \frac{Rs.60}{(1+.10)^3} + \frac{Rs.60}{(1+.10)^4} + \frac{Rs.60+Rs.1,000}{(1+.10)^5} \\ &= (60 \times .9091) + (60 \times .8264) + (60 \times .7513) + (60 \times .6830) + (1060 \times .6209) \\ &= 54.55 + 48.59 + 45.08 + 40.98 + 658.15 \\ &= Rs. 847.35 \end{aligned}$$

Anyone who purchases the bond will just have to pay Rs. 847.35. You will notice that the numerator of the PV equation will be provided at the moment the bond or debenture is issued. The maturity period, interest payment schedule, and maturity value will be indicated as well. The denominator of the equation, namely the discount rate, remains to be calculated. The discount rate, as you may have noticed, is the current market interest rate that investors can earn on comparable investments, such as new bonds with the same qualities. It is, in other words, an opportunity cost. As a result, the discount rate considers the influence of interest rates and reflects the issue's current market yield.

If the interest payments are semi-annual, the PV equation will have to be modified as follows: divide 'C', and 'r' both by 2 and multiply 'n' by 2. The resultant equation will be:

$$PV = \sum_{i=1}^{2n} \frac{C_{\frac{t}{2}}}{\left(1 + \frac{r}{2}\right)^t} + \frac{TV}{\left(1 + \frac{r}{2}\right)^{2n}} \dots \dots \dots (2)$$

Assuming semi-annual payments, present values of bonds A and B in the above examples can be solved as under:

$$PV = \sum_{i=1}^{10} \frac{Rs. 50}{(1.05)^t} + \frac{Rs. 1,000}{(1.05)^{10}}$$

$$= 50 \times 7.722 + 1000 \times .614 = 1,000 \text{ approx.}$$

$$PV = \sum_{i=1}^{10} \frac{Rs. 30}{(1.05)^t} + \frac{Rs. 1,000}{(1.05)^{10}}$$

$$= 30 \times 7.722 + 1000 \times .614$$

$$= Rs. 845.66$$

Estimating Returns on Fixed Income Securities:

Bond returns can be measured in a variety of ways. The ***coupon rate***, ***current yield***, and ***yield to maturity*** are the three popular methods of measuring the Bond returns. The coupon rate is stated at the time of issuing and is quite follow years other items are discussed below:

Current yield: This is calculated as follow:

$$\text{Current yield} = \frac{\text{Stated (coupon) interest rate per year}}{\text{Current market price}}$$

For example, if a 15%, Rs. 200 debenture is currently selling for Rs. 220 the annual current yield would be:

$$\frac{Rs. 30}{Rs. 220} = 13.64\%$$

Because interest rates have since fallen, the 15 percent debenture with a face value of Rs. 200 is now selling for Rs. 220, and debenture/bond prices move

inversely with interest rates. This is reflected in the current yield, which has dropped to 13.64 percent from a coupon rate of 15%.

Because it is based on the current market price, the current yield is a better gauge than the coupon rate. It does not, however, account for the difference between the bond/purchase debenture's price and its maturity value.

Yield-to-Maturity (YTM):

This is the most often used return on fixed-income securities metric. It is the compounded rate of return on a bond acquired at the current market price and held to maturity. YTM is calculated by matching a bond's current market price with the discounted value of future interest payments and the terminal principal payback. Hence, YTM equates the two values, namely the market price and the present value of future payments, including the principal repayment. The compounding intervals might be annual, semi-annual, or quarterly, as you can see. Equations (1) or (2) are commonly employed, with the latter being changed for compounding intervals greater than one year. The YTM is the internal rate of return (IRR) of the initial investment (market price) and periodic payments, including the principal amount paid after the period.

Assume that an investor pays Rs. 400 for a 15 percent fully secured non-convertible debenture with a face value of Rs. 500. The debenture is due to be repaid five years from now. The yield-to-maturity can be calculated using the following formula:

$$MP = \sum_{t=1}^n \frac{C_t}{(1 + YTM)^t} + \frac{TV}{(1 + YTM)^n}$$

$$\text{Or } Rs\ 400 = \sum_{t=1}^5 \frac{Rs.75}{(1 + YTM)^t} + \frac{Rs.500}{(1 + YTM)^n}$$

In this situation, a YTM value of Rs. 400 is required, which is equal to the sum of present values of Rs. 75 each year for five years and Rs. 500 receivable at the end of the fifth year. A trial-and-error approach is required, for which various YTM values can be tried until the equating value emerges. If the present value of the preceding trial exceeds the current market price, the following trial rate can be increased, and vice versa. As a result, the following present value of the right-hand side cash flows is projected using a 15% discount rate.

$$PV_{15\%} = Rs.75 \text{ per annum} \times PVIFA_{.5yrs,15\%} + Rs.500 \times PVIF_{15\% \ 5 \ yrs}$$

$$= Rs.75 \times 3.3522 + Rs.500 \times .4972 = Rs.251.42 + 248.60 = Rs.500.08$$

Since the PV of Rs. 500.08 exceeds Rs. 400, a higher discount rate must be tried.

The second trial may be made at 20%.

$$PV_{20\%} = Rs.75 \times 2.9906 + Rs.500 \times .402$$

$$= Rs.224.295 + Rs.200.95 = Rs.425.245$$

Even the second trial has failed to equate the two values. Hence, you can go over to the third trial at, say, 24%.

$$\begin{aligned} PV_{24\%} &= \text{Rs. } 75 \times 2.7454 + \text{Rs. } 500 \times .3411 \\ &= \text{Rs. } 205.91 + \text{Rs. } 170.55 = \text{Rs. } 376.46 \end{aligned}$$

The third trial has lowered the present value to Rs. 376.46 which is less than Rs. 400. Hence, the required YTM must lie between 20% and 24%. The estimate can be obtained by interpolating, thus:

$$\begin{aligned} \text{YTM} &= 20\% + \frac{425.245 - 400.00}{425.245 - 376.46} \times (24\% - 20\%) + \frac{25.245}{48.785} \times 4\% \\ &= 20\% + 2.07\% = 22.07\% \end{aligned}$$

You may have noticed that the YTM calculation is identical to the internal rate of return calculation. These calculations have become extremely simple because of calculators and computers. If you are familiar with Microsoft Excel, for example, you can acquire this value by using the = IRR () function. You should also keep in mind that the YTM is only a projected yield; the investor will not be able to earn it unless the bond/debenture is held to maturity. Further, the YTM concept is based on compound interest, with the investor earning interest-on-interest at YTM for the duration of the holding period until maturity. You should be aware that if intermediate cash flows are not reinvested at YTM, the actual realized yield will differ from the YTM provided.

For example, if interest rates fall in the market after the purchase of the above bond, the interest received at the end of each year (Rs.75) can only be invested at a lower rate, affecting the YTM, which you just calculated under the assumption that all interest received can be reinvested at the same YTM rate. At the same time, investors may not lose much because the bond's value (market price) will rise, making the bond more appealing for investment. After all, it pays a higher interest rate than the existing interest rate.

To estimate realized returns, investors must make certain assumptions regarding future reinvestment rates. Because investors know the YTM that will be achieved when the bond is held to maturity at the time of purchase, zero-coupon bonds reduce the risk of reinvestment rate risk.

YTM can be approximated, and tedious calculations are avoided by using the following formula:

$$\text{Approximate YTM} = \frac{\text{Coupon Interest} + \frac{(\text{MP}_n - \text{MP}_t)/N}{\frac{(\text{MP}_n + \text{MP}_t)}{2}}}{\frac{(\text{MP}_n + \text{MP}_t)}{2}}, \text{ where } \text{MP}_n \text{ is}$$

The market price at maturity and MP_t is the market price (or cost) at the beginning. In the above example, the approximate YTM is

$$\begin{aligned} &= \frac{75 + \left[\frac{500 - 400}{5} \right]}{\frac{500 + 400}{2}} = \frac{95}{450} = 21.11\% \end{aligned}$$

4.10 VALUATION OF PREFERENCE SHARES

The Preference shares are considered eternal securities in theory, but they have features like a convertible, callable, redeemable, and others that allow issuers to cancel them within a defined time horizon. Legal obligations demand the development of redemption sinking funds and their specified investments in the case of redeemable preference shares to assure money for repayment. Preference dividends are stated in the same way those bonds are. This is necessary because they receive dividends before equity shares.

Preference shares are less risky than equity because their dividends are fixed, and equity holders must pay all arrears before receiving dividends. They are, nevertheless, riskier than bonds because bonds get paid first and are liquidated first in case of insolvency. Investors expect higher returns on bonds than on preference shares, but lower returns than on equity shares.

Because preference share dividends are assumed to be perpetual payments, their intrinsic value will be calculated using the following equation, which is applicable for perpetuities in general:

$$V_p = \frac{C}{(1 + K_p)} + \frac{C}{(1 + K_p)^2} + \dots = \frac{C}{K_p}$$

Where,

V_p = the value of a perpetuity today

C = the constant annual payment to be received

K_p = the required rate of return appropriate for the perpetuity.

You have only to substitute preference dividend (D) for ' C ' and the appropriate required return (K_{ps}) for ' K_p ' and obtain the following equation for valuing preference shares.

$$V_{ps} = \frac{D}{K_{ps}}$$

It is worth noting that ' D ' stands for dividend stream till infinity and is always known and fixed. Perpetuity does not require present value calculations, and the equation only allows for the computation of one of the three variables, namely the value of the perpetuity (V_{ps}), preference dividend (D), and needed rate of return (K_{ps}), the other two variables are known. If the dividend per share and the needed rate of return are known, the value of a preference share can be computed. Similarly, if the value of the perpetuity and dividend per share is known, the needed rate of return (or yield) can be calculated.

A hypothetical example can be used to demonstrate how a preference share is valued. Consider the case of Firm A, which is issuing preference shares of Rs. 100 a piece with a dividend of Rs. 11.5 per share. Now, if the needed rate of return for investors corresponding to Firm-risk A's level is 10%, the share's current value is:

$$V_{ps} = \frac{Rs. 1.50}{.10} = Rs. 15.00$$

If the required return increases (say in the wake of rising interest rates, and consequence, the higher opportunity costs) to 12%, the value will be:

$$V_{ps} = \frac{Rs. 1.50}{.12} = Rs. 12.50$$

You may note that the value changes inversely to the required rate of return.

If you keep track of market prices, you can find the price of each preference share on any given day and use the calculation above to compute its yield. If the current market price of the preferred share is Rs. 125.00, the needed rate of return or yield can be computed as follows:

$$V_{ps} = \frac{D}{K_{ps}} = \text{or, } Rs. 125.00 = \frac{Rs. 1.50}{K_{ps}}$$

$$\text{Or } K_{ps} = \frac{Rs. 1.50}{125.00} = 9.2\%$$

Thus, the yield declines after the issue of the shares by the Firm- 'A'. Maybe, interest rates declined, or other factors changed to produce the downward shift in the yield.

You can observe price shifts over various ranges of times, say weeks, months, and years and examine causes for shifts in yields of preference shares.

4.11 VALUATION OF EQUITY SHARES

The focus of this section of the unit will be on the valuation of equity shares using present value principles. There are three basic approaches to valuation, which will be addressed in-depth; efficient market, technical, and fundamental. Much of what would be said and evaluated here, however, would be about the "basic approach to equity share valuation."

Present Value of Expected Stream of Benefits

The primary focus of the analysis is on present value, which is calculated as the discounted value of a future stream of benefits. The future stream of earnings presents two issues in the case of equity shares. **One**, as an obligation it is neither specified (as in the case of preference shares) nor perfectly known in advance (as in the case of bonds and debentures). As a result, future benefits must be calculated in a probabilistic framework alongwith the timing of returns. **Two**, at least three other variables, viz., dividends, cash flows, and earnings, are utilized as alternative measurements.

The past data, which has been suitably updated for future projections, provides a solution to the first challenge. Of course, investors must adjust historical data to reflect current conditions before calculating the growth rate. The second issue can alternatively be considered as a case where the three options do not conflict with one another. The essential question is; which

cash flows should be used to value equity shares? What cash flows will be received in the trust fund if you buy equity shares and place them entirely in a trust fund for your and your heirs' eternal benefit? Because dividends are a company's only cash payout to its shareholders, the answer is dividends. Even while all earnings per share belong to shareholders in any given year, firms do not distribute them all.

Does this imply that earnings should be ignored when valuing a company? No, most likely. Earnings are used to pay all dividends. Further, earnings are used as the basis for a common method of valuing equity shares known as the P/E ratio. As a result, earnings are crucial. All earnings will now be accounted for as dividends if they are paid out as dividends. If a portion of earnings is maintained and reinvested, the result will be a rise in future earnings and, as a result, future dividends. The earnings that are not reinvested and paid out as dividends should not be included in the present value analysis. It will result in duplicate counting. If the two variables, profits, and dividends, are properly specified and separated, the two variables will generate the same outcomes.

As a result, using dividends as the numerator of the present value equation to assess the intrinsic value of equity shares is always right. The dividend valuation model is a present value model that employs dividends as a variable to represent a cash flow stream. This model is discussed below, followed by a description of the P/E method for valuing equity shares.

Dividend Valuation Model:

Future dividends are discounted at the needed rate to determine the value of a share in the dividend valuation model. In terms of future dividends, there are three scenarios to consider;

- Dividends do not grow in the future, i.e., the zero growth assumption.
- Dividends grow at a constant rate in the future, i.e., the constant-growth assumption.
- Dividends grow at varying rates in future periods i.e., multiple-growth assumption.

The dividend valuation model is now discussed under the above three situations.

- a) The zero-growth Case:** The growth rate of dividend D at time 't' will be known by solving for 'g' in the following:

$$D_t = D_{t-1}(1 + g_t) \quad \text{---- (3)}$$

$$\text{or } \frac{D_t - D_{t-1}}{D_{t-1}} = g_t \quad \text{----- (4)}$$

You can easily see that when $g_t = 0$, equation 3 will yield $D_t = D_{t-1}$ which means all future dividends would be equal to the current dividend (i.e., the dividend of the immediately preceding period available as one date).

Now, the present value of dividends for an infinite future period would be:

$$V = \frac{D_t}{(1+K)} + \frac{D_t}{(1+K)^2} + \frac{D_t}{(1+K)^3} + \dots \dots \dots \infty \quad \text{..... (5)}$$

$$\sum_{t=1}^{\infty} \frac{D_t}{(1+K)^t}$$

Since, $D_0 = D_1 = D_2 = D_3$, under the zero-growth assumption, the numerator D_t in equation 3.5 is replaced by D_0 to get

$$V = \sum_{t=1}^{\infty} \frac{D_0}{(1+K)^t}$$

Taking the uniform ' D_0 ' out of summation, we obtain

$$V = D_0 \sum_{t=1}^{\infty} \frac{1}{(1+K)^t} \dots \dots \dots (6)$$

You will appreciate that discounting cash flows over a very distant long future period would, be meaningless and mathematics tells us that if $K > 0$ then the value of an infinite series like, the one in equation (6) is reduced to $\frac{1}{K}$ so that equation (3.6) results in the following:

$$V = D_0 \frac{[1]}{K} = \frac{D_0}{K} \dots \dots \dots (7)$$

And since $D_0 = D_1$, equation 3.7 can also be written as

$$V = \frac{D_t}{K} \dots \dots \dots (8)$$

You may recall that preference shares were valued using equation 8. This is an example of how the zero-growth assumption can be used.

It is possible to visualize the computation that underpins the zero-growth model. Consider a preference share on which the corporation anticipates paying a cash dividend of Rs. 9 per share in the future. The needed rate of return is 10%, and the market price is currently Rs. 80.00. Would you pay the current price for the stock?

Because the dividend per share remains at Rs. 9 for all future periods, this is a zero-growth case. Equation 7 or 8 can be used to calculate the intrinsic value of a stock:

$$V = \frac{\text{Rs. } 9.00}{.10} = \text{Rs. } 90$$

You would consider purchasing the stock because of the intrinsic value of Rs. 90 is higher than the market price of Rs. 80.

b) The Constant Growth Case: When dividends grow in all future periods at a uniform rate ' g ',

$$D_t = D_0(1+g) \dots \dots \dots (9)$$

Substituting ' D_t ' in equation 5 by the value of ' D_t ' in equation 9, we get

$$V = \sum_{t=0}^{\infty} \frac{D_0(1+g)^t}{(1+K)^t} \dots\dots\dots (10)$$

An equal amount, 'D₀' can be written out of summation to obtain the following equation:

$$D_0 \sum_{t=0}^{\infty} \frac{(1+g)^t}{(1+K)^t} \dots\dots\dots (11)$$

Using the mathematical properties of infinite series if $K > g$, then it can be shown that,

$$\sum_{t=1}^{\infty} \frac{(1+g)^t}{(1+K)^t} = \frac{(1+g)}{(K-g)} \dots\dots\dots (12)$$

Substituting equation 12 into equation 11 yields the valuation formula for the constant growth situation as follows:

$$V = D_0 \frac{(1+g)}{(K-g)} \dots\dots\dots (13)$$

Equation 13 can be re-written as follows.

$$V = \frac{D_0(1+g)}{(k-g)} = \frac{D_t}{(k-g)} \dots\dots\dots (14)$$

Example:

For the fiscal year ended March 31, 2021, Alfa Ltd. paid a dividend of Rs.2.00 per share. For the foreseeable future, a continuous growth rate of 10% per year has been predicted. The required rate of return for investors is projected to be 15%. You want to purchase the stock at the current market price of Rs. 60, as of July 1, 2021. What would you do if you had to make a choice?

Solution

This is a case of a constant-growth-rate situation. Equation 14 can be used to find out the intrinsic value of the equity share as under

$$V = \frac{D_1}{(k-g)} = \frac{Rs. 2(1.10)}{(.15 - .10)} = \frac{Rs. 2.20}{.05} = Rs. 44.00$$

The intrinsic value of Rs. 44 is less than the market price of Rs.60.00. Hence, the share is overvalued, and you would think before investing in the stock.

- c) **The Multiple-Growth Case:** In a wide range of practical scenarios, the multiple-growth assumption must be established. The indefinite future period is divided into two or more separate growing phases. The investor must anticipate the time 'T' during which growth will be erratic, and only

the growth rate will display a pattern and be stable after that. This means that present value computations will have to be split into two parts, one lasting until time 'T' and the other lasting until time infinite.

All dividends predicted up to and including time 'T' $V_{T(1)}$ would have the following present value: (15)

$$V_{T(1)} = \sum_{t=1}^T \frac{D_t}{(1+k)^t} \dots \dots \dots (15)$$

The second phase present value is denoted by $V_{T(2)}$ and would be based on constant-growth dividends forecast after time 'T'. The position of the investor at a time 'T' after which the second phase commences can be viewed as a point in time when he is forecasting a stream of dividends for periods T+1, T+2, T+3, and so on which grow at a constant rate. The second phase dividends would be:

$$D_{T+1} = D_T (1 + g)$$

$$D_{T+2} = D_{T+1} (1 + g) = D_T (1 + g)^2$$

$$D_{T+3} = D_{T+2} (1 + g) = D_T (1 + g)^3$$

And so on. The present value of the second phase stream of dividends can, therefore, be estimated using equation 14 at time 'T':

$$V_T = D_{(T+1)} \frac{(1)}{(k - g)} \dots \dots \dots (16)$$

You may note that ' V_T ' given by equation 16 is the present value at time 'T' of all future expected dividends. Hence, when this value has to be viewed at a time 'zero', it must be discounted to provide the present value at 'zero' time for the second phase present value. The latter can also be viewed at a time 'zero' as a series of cash dividends that grow at a constant rate as already stated. The resulting second phase value $V_{T(2)}$ will be given by the following equation:

$$\begin{aligned} V_{T(2)} &= V_T \left[\frac{1}{(1+k)^T} \right] \\ &= \frac{D_{T+1}}{(k - g)(1+k)^T} \dots \dots \dots (17) \end{aligned}$$

Now, the two present values of phase 1 and phase 2 can be added to estimate the intrinsic value of an equity share that will pass through a multiple growth situation. The following describes the summation procedure of the two phases:

$$\begin{aligned} V_0 &= V_{T(1)} + V_{T(2)} \\ &= \sum_{t=1}^T \frac{D_t}{(1+k)^t} + \frac{D_{T+1}}{(k - g)(1+k)^T} \dots \dots \dots (18) \end{aligned}$$

Example

Cronecom Ltd. paid dividends amounting to Rs.0.75 per share during the last year. The company is expected to pay Rs. 2.00 per share during the next year. Investors forecast a dividend of Rs. 3.00 per share in the year after that. At this time, the forecast is that dividends will grow at 10% per year into an indefinite future. Would you buy/sell the share if the current price is Rs. 50.00? The required rate of return is 15%.

Solution

This is a case of multiple growths. The values $V_{T(1)}$ and $V_{T(2)}$ be then calculated as follows:

$$V_{T(1)} = \frac{\text{Rs. } 2.0}{(1 + .15)^1} + \frac{\text{Rs. } 3.0}{(1 + .15)^2} = \text{Rs. } 4.10$$

$$V_{T(2)} = \frac{\text{Rs. } 3.30}{(.15 - .10)(1 + .15)^2} = \text{Rs. } 49.91$$

Since $V_0 = V_{T(1)} + V_{T(2)}$, the two values can be summed to find the intrinsic value of a Cronecom equity share at the time 'zero'. This is given below:

$$V_0 = \text{Rs. } 4.01 + \text{Rs. } 49.91 = \text{Rs. } 53.92$$

At the current price of Rs. 50.00, the share is underpriced and hence you will buy the stock.

P/E Approach to Equity Valuation:

The P/E methodology, unlike the dividend capitalization model, is relatively straightforward and commonly used in the stock market. Estimating future earnings per share is the first stage in this methodology. The typical price-earnings ratio will then be determined. The expected price is the sum of these two estimations. The most practical way to use the P/E model is to first compute the industry average P/E or P/E of similar firms, then multiply it by the stock's predicted or current earnings. When an industry is experiencing rapid growth, its P/E is likely to be high. If the industry or firm is predicted to grow slowly, the P/E will be below. The risk connected with earnings has an impact on P/E.

Though growth rates and the P/E ratio are not entirely associated, they do provide some insight into the impact of fundamentals on the P/E ratio. P/E ratios are influenced by several additional factors.

4.12 SUMMARY

The value of an asset is a function of future cash flows from the asset. The required rate of return is discounted into future cash flows in the general valuation model. All assets, including financial assets, are covered under this approach. Because future cash flows are more predictable, the approach may be applied more easily to fixed income instruments. It is significantly easier to calculate the bond's value given future interest and principal repayments.

Because the market price is already known, the valuation exercise is frequently reduced to determining whether the asset is appropriately priced. The general valuation model is frequently used to compute the yield to maturity (YTM) to compare fixed income assets or bonds with the current yield-of-similar securities to judge them under or overvaluation of bonds.

The present value of a succession of cash dividends in future periods, with assumptions about various growth levels and scenarios incorporated to make calculations useable in practice, is the intrinsic value of a share at any point in time. For practicing security analysts and investors, dividend valuation models with zero growth, constant growth, and super-normal growth assumptions are useful. In all of these models, the discount rate is the investor's necessary rate of return, adjusted for the time value of money and the riskiness of returns.

The price-earnings model is a far more straightforward and practical valuation methodology. The stock price is calculated using this methodology as the product of predicted earnings and the stock's regular P/E ratio. The standard P/E ratio is either the industry average or the P/E ratio of comparable companies in the market. Of course, analysts cannot rely solely on the P/E model, or even theoretically richer dividend discount models, because the stock's value is determined by a variety of other factors.

4.13 KEY WORDS

Active Investment Strategy: Buying and selling financial assets to obtain positive risk-adjusted returns is a type of investment management.

Passive Investment Strategy: A strategy whereby investors do not actively seek out trading possibilities in an attempt to outperform the market.

Constant Growth Model: A variation of the dividend valuation model that assumes payouts will grow at the same pace across time. It can be used to figure out the share current price.

Multiple Growth Model: A type of dividend valuation model in which dividends are assumed to grow at different rates over specifically defined periods.

Dividend Valuation Model: A model for valuing equity shares that are extensively utilized. According to the approach, a share's current price is equal to the discounted value of all future dividends.

Earnings Multiplier: The P/E method states that a stock's price is equal to the product of its earnings and a multiplier.

Top-down Forecasting: The security valuation sequence, which includes forecasting the economy first, then industries, and lastly individual enterprises. Each forecast level is dependent on the previous forecast level.

Interest Rate Risk: The uncertainty in the return on fixed-income security caused by unanticipated fluctuations in the value of the asset due to changes in interest rates.

P/E Ratio: The ratio of share price to earnings using historical, current, or estimated data. This ratio is also referred to as a multiplier.

Promised Yield-to-Maturity: The yield-to-maturity on a bond is calculated assuming that all promised cash flows are received on a full and timely basis.

Holding Period Return: The total return from an investment for a given period, including both yield and capital gain or loss.

Yield-to-Maturity: The indicated (promised) compounded rate of return that an investor will receive from a bond purchased at the current market price and held to maturity.

4.14 SELF ASSESSMENT QUESTIONS/ EXERCISES

1. What is the purpose of valuation and how it will impact the value estimates?
2. Explain the different approaches of Valuation? Give examples of each approach.
3. Satin Ltd. has the following details: ROE = 15%, Expected EPS = Rs. 5, Expected DPS = Rs. 2 Required rates of return = 10% p.a. As a financial advisor, you are required to calculate its expected growth rate, its price, P/E ratio.
4. A firm is currently paying a dividend of Rs. 2 per share. The rate of dividend is expected to grow at 5% for the first five years and 10% thereafter. Find the value of the share if the required rate of return is 15%.
5. Indicate the correct alternative in the following:
 - a) The value of security:
 - i) is synonymous with its price.
 - ii) depends on the assessed value of the firm's physical assets.
 - iii) equals the discounted present value of its future income.
 - b) An investor would be taking a rational decision if:
 - i) he buys when the price is greater than the value.
 - ii) he does not trade when the price is less than value.
 - iii) he buys when the price is less than value.
 - c) The Cootner hypothesis states that:
 - i) prices and values both fluctuate.
 - ii) prices fluctuate within upper and lower reflecting barriers that bracket the consensus value estimate.
 - iii) both of the above
 - d) The erratic price changes in securities markets are caused by:

- i) the supply and demand conditions of primary issues
 - ii) the continuous arrival of new information
 - iii) the size of trading volume in the security
 - e) A perfectly efficient securities market is one where:
 - i) prices and values fluctuate.
 - ii) prices equal values in a continuous equilibrium and they vibrate together randomly.
 - iii) both the above
6. The equity share of Manjit Textiles Ltd., is currently selling at Rs. 55.00. Earnings per share and dividends per share of the company over the past year were Rs. 3.00 and Rs. 0.75, respectively. Fundamental analysts have worked out the following forecasts of dividends, earnings, growth rates, and payout ratios for the next two years.

Year-1

$D_1 = \text{Rs. } 2.00$; $E_1 = \text{Rs. } 5.00$; $g_{e1} = 67\%$; $p_1 = 40\%$

Year-2

$D_2 = \text{Rs. } 3.00$; $E_2 = \text{Rs. } 6.00$; $g_{e2} = 20\%$; $p_2 = 50\%$

It has been further forecasted that earnings and dividends are expected to grow at a constant rate of 10% after year 2. Consequently, the data for year 3 would be as follows:

Year-3

$D_3 = \text{Rs. } 3.30$; $E_3 = \text{Rs. } 6.60$; $g_{e3} = 10\%$; $p_3 = 50\%$

You are required to estimate the normal price-earnings ratio of Manjit Textiles if the required rate of return is 15%. Do you think that the Manjit Textiles equity share is fairly valued?

7. Indicate if the following statements are *True* or *False*:
- a. If the economic outlook suggests a recession that will have an impact on all industries and all companies, investors would be advised to maintain high portfolio liquidity.
 - b. Cyclical industries typically do much better than the aggregate economy during downturns but suffer more during upturns.
 - c. It is not necessary to know the time pattern of returns from an investment so that the income stream can be properly valued relative to alternative investments.
 - d. Results of a study by King showed that about 62 percent of the security's price changes were explained by a combination of market and industry components.
 - e. A bond promises interest payments every six months equal to one-half the coupon rate times the face value of the bond and the payment of the principal at its maturity.

4.15 FURTHER READINGS

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BLOCK-2
**COST OF CAPITAL AND INVESTMENT
DECISIONS**

Unit 5 Cost of Capital

Unit 6 Investment Appraisal Methods

Unit 7 Management of Working Capital



UNIT 5 COST OF CAPITAL

Objectives:

The objectives of this unit are to:

- Provide conceptual understanding of the Cost of Capital and its Variants.
- Examine the significance of Cost of Capital.
- Illustrate the computation of Cost of specific Sources of Long-Term Finance.
- Discuss various approaches in the computation of Weighted Cost of Capital.

Structure:

- 5.1 Introduction
- 5.2 Cost of Capital
- 5.3 Components of Cost of Capital
- 5.4 Classification of Cost of Capital
- 5.5 Significance of Cost of Capital
- 5.6 Computing Cost of Capital of Individual Components
 - 5.6.1 Cost of Long-Term Debt
 - 5.6.2 Cost of Preference Capital
 - 5.6.3 Cost of Equity Capital
 - 5.6.4 Cost of Retained Earnings
- 5.7 Weighted Cost of Capital
- 5.8 Some misconceptions about the Cost of Capital
- 5.9 Summary
- 5.10 Keywords
- 5.11 Self Assessment Questions
- 5.12 Further Readings

5.1 INTRODUCTION

Capital needed for the business is mobilized from various sources. The promoter of the business usually puts in her/his own money and when the same is inadequate s/he raises resources from other sources which may include loans from relatives, friends, banks, and other financial and non-financial institutions. When the promoter borrows money, he has to pay interest to the lenders. The same may be interpreted as the 'Cost of Capital'. Simply because, the promoter has put in his own money, we cannot presume that it is free. He should get some reasonable rate of return. The return he expects may be understood as the 'Cost of Capital' for the money supplied by the promoter. Alternatively, we may also understand the concept like this.

Suppose the promoter, instead of starting this business, he has simply lent this money to a friend for interest.

The rate of interest he receives may be taken as the cost of capital. Or else, let us assume that he deposited the money in a bank. The interest he receives may be treated as the cost of capital. Thus, there are many ways to understand the concept of cost of capital. In all these possibilities, it is called the 'Opportunity Cost of Capital'. Therefore, Cost of Capital is an important concept in the Finance Literature. All the financial decisions are made keeping the cost of capital in view only. As seen above, when funds are mobilized from various sources, we need to offer some return to the suppliers of capital. The rate at which the return is paid turns out to be the cost of capital.

In this unit, we shall discuss upon the concept of the cost of capital and its classification, significance of cost of capital, the process of computing cost of capital of individual components, weighted average cost of capital, and a few illustrations about the cost of capital from the Balance Sheets of the companies.

5.2 COST OF CAPITAL

As explained earlier, cost of capital is the rate of compensation paid to the money invested in the business. The same might have been supplied by the promoter from his own savings, resources; or he might have borrowed the same. In the Finance terminology, the term cost of capital refers to the minimum rate of return that a firm must earn on its investments so as to keep the value of the enterprise intact. It represents the rate of return which the firm must pay to the suppliers of capital for use of their funds.

The following are the basic characteristics of cost of capital:

- i) Cost of capital is the rate of return, and not expressed in amounts.
- ii) A firm's cost of capital represents minimum rate of return that will result in at least maintaining (If not increasing) the value of the firm.
- iii) Cost of Capital, as a rate of return, is calculated on the basis of actual cost of different components of capital.
- iv) It is usually related to long-term capital funds.

In operational terms, Cost of Capital in terms of rate of return is used as discount rate, used to discount the future cash inflows, so as to determine their present value and compare it with investment outlay.

Assessment of the Cost of Capital is always related to risk. There will be different kinds of investments involving diverse risk levels. For example, putting money in a Bank yields some return at zero risk. At the same time, you may invest your money in a Debenture/Bond of a company with some risk. Third, you may invest in Equity Shares of a company, whose share prices would be fluctuating. In this sense, this is considered risky.

5.3 COMPONENTS OF COST OF CAPITAL

Cost of Capital thus has the following components:

- a) Return at Zero Risk Level.
- b) Premium for Business Risk.
- c) Premium for Financial Risk.

The cost of capital may be put in the form of the following equation:

$$K = r_0 + b + f$$

Where,

K = Cost of Capital

r_0 = Return at zero risk level (Risk free returns)

b = Premium for business risk

f = Premium for financial risk

Thus,

- a) Cost of Capital with Business Risk > Cost of Capital with no risk; and
- b) Cost of Capital with financial risk > Cost of Capital with Business Risk > Cost of Capital with no risk.

Let us understand in some detail, the concepts of business risk and financial risk. Business Risk is the one associated with every business. In the usual sense, doing business is risky. In the sense that there is no guarantee that the person starting the business would get profits. He may incur loss also. Therefore, business risk is said to be the chance of making loss or less than expected profit. This risk is said to arise due to the factors, beyond the control of the businessman. For example, demand for the products or services may come down than expected as it is happening during the times of the present Covid-19 pandemic. It may also happen because of changes in the preferences of the consumers and may also be due to new products. There could be several economic and non-economic factors contributing to the business risk. Therefore, every businessman shall scan the environment continuously to note down the changes happening around and to take appropriate corrective action.

In contrast, financial risk is the one arising out of the improper financial mix of resources employed to run the business. This may be understood as the failure of the business in meeting its financial obligations like the payment of interest on the borrowed capital on the due dates, repayment of loans taken as promised. It may also arise due to lack of ability to pay the running expenses like electricity charges, taxes, cess, fees, etc. Basically, the financial risk is understood as the inability of the firm to pay off the debt holders in time. It is said to be arising mainly due to high debt proportion in the capital structure. The three major components of this risk are: Credit Risk, Liquidity Risk and Equity Risk. The credit risk occurs due to the inability of the firm to pay off its creditors. Liquidity risk arises when the firm is not in a position to encash

its assets in a limited time. Equity risk is associated with the fluctuations in the share prices of the company.

The Firm's Capital comprises of equity and debt. The firm's overall cost of capital is the weighted arithmetic average of the cost of various sources of long term finances. Suppose a firm's capital structure consist of 30% equity capital and 70% debt capital and cost of equity is 12% and cost of debt is 10%, the cost of capital for the firm will be:

$$\begin{aligned}\text{Cost of Capital} &= \text{proportion of equity} \times \text{cost of equity} + \text{proportion of debt} \\ &\quad \times \text{cost of debt} \\ &= 30 \times .12 + 70 \times .10 \\ &= 3.6 + 7 = 10.6\%\end{aligned}$$

In general if the firm uses n different sources of finance the cost of capital is:

$$R_a = \sum p_i R_i$$

Where,

$$\begin{aligned}R_a &= \text{average cost of capital} \\ p_i &= \text{proportion of the } i^{\text{th}} \text{ source of finance} \\ R_i &= \text{cost of the } i^{\text{th}} \text{ source of finance}\end{aligned}$$

In order to find out the average cost of capital it is necessary to calculate the individual cost of specific source of capital viz. cost of equity and cost of debt.

In general the cost of capital for any source is the rate of discount which equals the present value of the expected payments to that source of finance with the net funds received from that source of finance.

The value of R in the following equation is the cost of capital

$$P = \sum_{t=1}^n \frac{C_t}{(1 + R)^t}$$

Where,

P = net funds received from the source

C_t = expected receipt from the source at the end of year 't'

Here we should keep in view that costs are measured on post tax basis the reason being that investment cashflows are defined in post tax terms.

5.4 CLASSIFICATION OF COST OF CAPITAL

Cost of Capital can be classified as follows:

- 1) **Explicit Cost and Implicit Cost:** Explicit cost is the discount rate that equates the present value of the expected incremental cash inflows with the present value of its incremental cash out flows. Thus, it is 'the rate of return of the cash flows of financing opportunity'. In contrast, implicit cost is the rate of return associated with the best investment opportunity

for the firm and its shareholders that will be foregone if the project presently under consideration by the firm were accepted. In a nutshell, explicit costs relate to raising of funds while implicit costs relate to usage of funds.

- 2) **Average Cost and Marginal Cost:** The average cost is the weighted average of the costs of each component of funds. After ascertaining costs of each source of capital, appropriate weights are assigned to each component of capital. Marginal cost of capital is the weighted average cost of new funds raised by the firm.
- 3) **Future Cost of Capital and Historical Cost:** Future cost of capital refers to the expected cost to be incurred in raising new funds while historical cost represents cost of capital incurred in the past in procuring funds for the firms. In financial decision making, future cost of capital is relatively more relevant.
- 4) **Specific Cost and Combined Cost:** The costs of individual components of capital are specific cost of capital. The combined cost of capital is the average cost of capital as it is inclusive of cost of capital from all sources. In capital budgeting decisions, combined cost of used for accepting /rejecting the investment proposals.
- 5) **Opportunity Cost of Capital:** In contrast, opportunity cost of capital is the return foregone, because of choosing the present investment, against another or other alternative investments. A precise estimate of this cost would be possible only when we are thorough about those alternative investments taken in comparison.

Activity 5.1

- 1) Define the following:

- | | | |
|---------------------|-------------------|----------------------|
| i) Explicit Cost | iii) Average Cost | (v) Opportunity Cost |
| ii) Cost of Capital | iv) Marginal Cost | (vi) Specific Cost |

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- 2) Discuss various types of risks associated with the concept of Cost of Capital.

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- 3) State how Cost of Capital becomes significant to a Business Firm.

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5.5 SIGNIFICANCE OF COST OF CAPITAL

The concept of cost of capital is central to the financial decision making. The very idea and action to start a business is based on the cost of capital. If the proposed business is notable to generate return (profits) at least equivalent to that of cost of capital, there is no point in taking up such business. Therefore, cost of capital has paramount influence in financial decision making. The following are a few such situations that turn cost of capital highly significant:

- a) Cost of capital provides the very basis for financial appraisal of new capital expenditure proposals and thus serves as acceptance criterion for capital expenditure projects.
- b) Cost of capital helps the managers to determine the optimal capital structure of the firm.
- c) Cost of capital serves as the basis for evaluating the financial performance of top management.
- d) Cost of capital also helps in formulating dividend policy and working capital policy.
- e) Cost of capital can serve as capitalization rate which can be used to determine capitalization of a new firm.

Activity 5.2

- 1) List three points that highlight the significance of Cost of Capital.

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5.6 COMPUTING COST OF CAPITAL OF INDIVIDUAL COMPONENTS

Computation of cost of capital from each source of funds helps in determining the overall cost of capital for the firm. There are four basic sources of long-term funds for a business firm. They are:

- i) Long-term Debt and Debentures,

- ii) Preference Share Capital,
- iii) Equity Share Capital,
- iv) Retained Earnings

Though all of these sources may not be tapped by the firm for funding its activities at any single point of time, each firm will have some of these sources in its capital structure. The specific cost of each source of funds is the after-tax cost of financing. The procedure for determining the costs of debt, preference and equity capital as well as retained earnings is discussed in the following sub-sections.

5.6.1 Cost of Long-Term Debt

Cost of long-term debt represents the minimum rate of return that must be earned on debt financed investments if the firm's value is to remain intact. In terms of the concept of present value the cost of debt capital is the rate of discount which equates the present value of post tax interest and principal repayments with the net proceeds of debt issue. Long-term debt may be issued at par, at premium or discount. It may be perpetual or redeemable. Diverse kinds of Debentures (Convertible and Non-Convertible), fixed income securities and long-term loans raised from Banks and Financial Institutions come under this category. The computation of cost in each of these cases has been explained hereunder:

- a) ***The formula for computing the Cost of Long-term debt at par is:***

$$K_d = (1 - T) R$$

Where,

K_d = Cost of Long-Term Debt

T = Tax Rate

R = Interest Rate

Example, if a company has issued debentures carrying 10% and the applicable tax rate is 40%, the cost of debt will be:

$$\begin{aligned} K_d &= (1 - 0.4) \times 0.1 \\ &= 0.6 \times 0.1 = 0.06 = 6\% \end{aligned}$$

- b) ***In case, the debentures are issued at a premium or discount,*** the cost of the debt should be calculated on the basis of net proceeds realised. The formula is as follows:

$$K_d = \frac{I}{N_p} (1 - T)$$

Where,

K_d = Cost of debt after tax

I = Annual Interest Payment

N_p = Net Proceeds received by the holder on redemption

T = Tax Rate

Example: A company issues 10% irredeemable debentures of Rs. 1,00,000. The company is in 60% tax bracket.

$$\text{Cost of Debt at par} = \frac{\text{Rs. } 10,000}{\text{Rs. } 1,00,000} \times (1 - 60) = 4\%$$

$$\begin{aligned} \text{Cost of Debt if issued at 10\% discount} &= \frac{\text{Rs. } 10,000}{\text{Rs. } 90,000} \times (1 - 60) \\ &= 4.44\% \end{aligned}$$

$$\begin{aligned} \text{Cost of Debt if issued at 10\% premium} &= \frac{\text{Rs. } 10,000}{\text{Rs. } 1,10,000} \times (1 - 60) \\ &= 3.63\% \end{aligned}$$

Therefore, the company's cost of capital goes up, if debt is issued at discount and goes down, if issued for premium. In actual practice, there will not be any perpetual debt. Every debt should have some time period.

- c) **For computing cost of redeemable debt**, the period of redemption is considered. The cost of long-term debt is the investor's yield to maturity adjusted by the firm's tax rate plus distribution cost. The question of Yield to Maturity (YTM) arises only when the loan is taken either at discount or at premium. The formula for cost of debt will be:

$$K_d = \frac{\left[I + \left(\frac{R_v - S_v}{N} \right) \right] (1 - T)}{\frac{R_v + S_v}{2}}$$

Where,

K_d = cost of capital

I = Annual interest payment

R_v = Redeemable value of debt at the time of maturity

S_v = Sale value less discount and flotation costs

N = number of years to maturity

T = Company's effective tax rate

Example: A firm issued 1,000, 10% debentures, each of Rs. 100 at 5% discount. The debentures are to be redeemed in the beginning of 11th year. The tax rate for company is 50%.

$$\begin{aligned} K_d &= \frac{\left[10,000 + \left(\frac{1,00,000 - 95,000}{10} \right) \right] \times (1 - .5)}{\frac{(1,00,000 + 95,000)}{2}} \\ &= \frac{52,50}{97,500} \\ &= 5.385 \end{aligned}$$

- d) **In case of underwriting and other issuing costs**, they are adjusted in the same way as discount is being adjusted in net proceeds and other calculations.

Example: A company raised loan by selling 2,500 debentures of par value of Rs. 100 carrying 10% rate of interest at premium of Rs. 5 per debenture (Par value = Rs. 100), redeemable in the 11th year. Underwriting and other issuance costs amounted to 3% of the proceeds. The tax rate is 50%.

$$\begin{aligned}
 &= \frac{\left[25,000 + \left(\frac{2,50,000 - 2,54,625}{10}\right)\right] \times .5}{\frac{(2,50,000 + 2,54,625)}{2}} \\
 &= \frac{(25,000 - 462.5)}{2,52,312.5} \times .5 \\
 &= \frac{12268.75}{2,52,312.5} \\
 &= 4.862\%
 \end{aligned}$$

e) Yield to Maturity (YTM) Method:

Simply stated YTM of a Debenture is the discount rate that equates the current price with the present value of the future cash flows of the Debenture. Thus,

$$C_p = \frac{C_1}{(1 + YTM)^1} + \frac{C_2}{(1 + YTM)^2} + \frac{C_3}{(1 + YTM)^3} + \dots + \frac{C_n}{(1 + YTM)^n}$$

In the given formula, YTM is required to be arrived at on a trial-and-error basis. Suppose the market price of Rs. 100 par value bond carrying an interest rate of 9% and maturing after 8 years is Rs. 80. Now let us determine the rate of return an investor would earn if S/he buys the bond and hold it till the maturity. The rate of return that investor is called yield to maturity and is the value of K_d in the following equation

$$PV = \sum_{t=1}^n \frac{C}{(1 + K_d)^t} + \frac{FV}{(1 + K_d)^n}$$

Alternatively the above equation can be written as

$$PV = C \times (PVIFA_{K_d, n_{years}}) + FV \times (PVIF_{K_d, n_{years}})$$

The YTM will be:

$$\begin{aligned}
 10 = & \frac{9}{(1 + YTM)^1} + \frac{9}{(1 + YTM)^2} + \frac{9}{(1 + YTM)^3} + \frac{9}{(1 + YTM)^4} + \frac{9}{(1 + YTM)^5} + \\
 & \frac{9}{(1 + YTM)^6} + \dots + \frac{9}{(1 + YTM)^8} + \frac{100}{(1 + YTM)^8}
 \end{aligned}$$

Using the present value tables, we can solve for the YTM.

Where,

C_n = Annual Interest paid on the Bond (This is the coupon Rate)

FV = Face Value

PV = Present Market Price

t = Number of years to Maturity

PVIFA K_d, n_{years} = Present value interest factor for annuity of n_{years} with K_d rate

PVIF K_d, n_{years} = Present value interest factor for n_{years} at k rate. In order to find the value of K_d which satisfies the above equation we will have to resort to trial and error method. However for quick calculation you can use an approximation to calculate YTM of a bond which is

$$\text{YTM} = \frac{C + (M - P) / N}{0.4M + 0.6P}$$

Where

YTM = Yield to maturity

C = annual interest payment

M = maturity value of the bond

P = Present price of the bond

n = Years to maturity

For example, a company has issued a 5-year debenture of the Face Value of Rs.2,000, with a coupon rate of 10 and the current market price is Rs.1800. Then the YTM will be:

$$\begin{aligned} &= \frac{200 + (2000 - 1800) / 5}{.4 \times 2000 + .6 \times 1800} \\ &= \frac{200 + 40}{800 + 1080} \\ &= \frac{240}{1880} = .1276 \\ &= 12.76\% \end{aligned}$$

A variant of YTM is the Current Yield (CY), generally computed at a particular point of time.

$$\text{CY} = \frac{\text{Interest Amount as per Coupon Rate}}{\text{Current Market Price of the Debenture}}$$

$$\text{For the given example CY} = \frac{200}{1800} \times 100 = 11.11\%$$

Effective cost of debt is lower than the interest paid to the creditors because the firm can deduct interest amount from its taxable income. The higher the tax rate, the lower the effective interest rate on debt and lower the cost of debt.

Now coming back to the previous example, the starting point for trial and error method would be to find out the absolute return which is 11.25% in form of interest paid annually and 25% when the bond is redeemed, therefore the starting value for trial and error should be greater than 11.25%

Now starting with 12% we get

$$\text{Rs. } 9 (\text{PVIFA}_{12\%, 8 \text{ years}}) + 100 (\text{PVIF}_{12\%, 8 \text{ years}})$$

$$\text{Rs. } 9 \times 4.968 + 100 \times .404 = 85.112$$

Since this value is greater than Rs. 80 we try a higher value of K_d of 14%

$$\text{Rs. } 9 (\text{PVIFA}_{14\%, 8 \text{ years}}) + 100 (\text{PVIF}_{14\%, 8 \text{ years}})$$

$$= 9 \times 4.639 + 100 \times .351 = 76.851$$

Now since this value is less than Rs. 80 we try a lower value of K_d at 13%

$$\text{Rs. } 9 (\text{PVIFA}_{13\%, 8 \text{ years}}) + 100 (\text{PVIF}_{13\%, 8 \text{ years}})$$

$$= 9 \times 4.80 + 100 \times .376 = 80.8$$

From the above calculations it is clear that K_d lies between 13 and 14 percent. Using the linear interpolation we can calculate the exact K_d . The procedure for linear interpolation is as follows:

- i) Find out the difference between the present values of the corresponding two rates within which the K_d falls. In this case the difference is $(80.8 - 76.85) = 3.95$
- ii) Find the difference between the present value corresponding the lower rate (Rs. 80.8 at 13%) and the target value of Rs. 80 which in this case comes to 8.8.
- iii) Divide the outcome of step (ii) with outcome of step (i) and add this fraction to the lower rate of 13%.

$$13\% + (14\% - 13\%) \times \frac{80.8 - 80}{80.8 - 76.85} = 13.2\%$$

So in this particular case the YTM is 13.2%

The above method provides an exact estimate of YTM of a bond, but if you want to make a quick approximation of YTM you can use the following formula

$$\text{YTM} = \frac{C + (FV - PV)^n}{0.4FV + 0.6PV}$$

So taking values from above example YTM will be

$$\frac{9 + (100 - 80)/8}{.4 \times 100 + .6 \times 80} = \frac{9 + 2.5}{40 + 48} = \frac{11.5}{88} = .1306 = 13.06\%$$

Interest Effect on Cost of Capital: As seen above, it is implicit in the calculations that interest paid on the borrowed capital is allowed as the deduction from taxable income. As a result, the effective rate of interest would come down. Discuss?

There are two firms, A and B. The firm A has no debt and is totally financed by equity capital. The firm B has Rs. 200 lakh outstanding debt and pays an interest at the rate of 10 per cent. The firm's net income after-taxes is calculated using three tax rates, 0, 25 and 50 per cent and the resulting values of net incomes are compared. Assume that the earnings before interest and taxes of both firms are Rs. 100 lakhs each.

Tax Rates and Effective Cost of Debt

(Rs. in lakh)

		0% tax rate		25% tax rate		50% tax rate	
		Firm A	Firm B	Firm A	Firm B	Firm A	Firm B
1.	Earnings before-interest and taxes	100	100	100	100	100	100
2.	Interest	0	20	0	20	0	20
3.	Taxable income	100	80	100	80	100	80
4.	Taxes	0	0	25	20	50	40
5.	Net income after taxes (NIAT)	100	80	75	60	50	40
(a)	Difference in NIAT	20		15		10	
(b)	Effective cost of debt	10%		7.5%		5%	

It is evident from the above that:

- The NIAT of firm A > NIAT of firm B.
- If no taxes were paid, the only difference between the net incomes of the two firms would be the interest expense incurred by the firm B. As the tax rate increases, this difference diminishes. In the case of 0% tax rate, we can say that the effective rate of debt is 10% (Rs. 20 / Rs. 200). In the case of 25% and 50% tax rate it is 7.5% and 5%, respectively.

Using the above analogy, a simple formula for computing the cost of debt may be stated as follows:

Effective cost of debt = Interest Rate $\times$ (1.0 – Tax Rate)

Substituting the data from the above example:

- Effective cost of debt at 0% tax rate = $10\% \times (1.0 - 0.00) = 10\%$
- Effective cost of debt at 25% tax rate = $10\% \times (1.0 - 0.25) = 7.5\%$
- Effective cost of debt at 50% tax rate = $10\% \times (1.0 - 0.50) = 5\%$

A more generalized way of calculating the cost of debt capital is to find out the discount rate which equates the present value of post-tax interest and principal repayments with the net proceeds of the debt issue, i.e. (Par value $\times$ No. of bonds – Floatation costs). Mathematically, this relationship can be expressed as follows:

$$PV = \sum_{t=1}^n \frac{C(1 - T)}{(1 + K_d)^t} + \frac{FV}{(1 + K_d)^n}$$

Where:

P = net amount realized on debt issue

C = Annual interest payment (Absolute Amount)

T = Tax rate applicable

F = Redemption Value (Absolute Amount)

n = Maturity period of debt.

In the above equation solving for K_d would yield the cost of debt capital. For solving the above equation n approximation can be used which yield would be fairly close to the value.

$$K_d = \frac{C(I-T) + \frac{(F-P)}{n}}{(F+P)/2}$$

Amortization of the Cost of Issue: Since the issue flotation cost is tax deductible cost and can be amortized evenly over the duration of debt finance, the cost of debt capital would be K in the following equation.

$$P = \sum_{t=1}^n \frac{C(I-T) - \frac{(F-P)^T}{n}}{(1+K_d)^t} + \frac{F}{(1+k)^n}$$

An approximation for K_d is as follows:

$$K_d = \frac{C(1-T) + \frac{(F-P)}{n}(1-T)}{(F+P)/2}$$

Activity 5.3

1. A firm intends to issue 1,000, 10% debentures each of Rs. 100. What is the cost of debt if the firm desires to sell at 5% premium? The tax rate is 50%.
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2. A firm issue 1,000, 10% debentures of Rs. 100 each at a premium of 5% with a maturity period of 10 years. The tax rate is 50%. Find the cost of capital.
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3. A company raises loan of Rs. 2,50,000 by 10% debentures at 5% discount for a period of ten years, underwriting costs are 3% and tax rate is 50%.
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5.6.2 Cost of Preference Shares (Capital)

Cost of preference share capital represents the rate of return that must be earned on preferred stocks to keep the earnings available to residual stockholders unchanged. Cost of preference shares can be estimated by dividing the dividend stipulated per share by the current market price of the share.

$$\text{Cost of Preference Capital} = \frac{\text{Dividend}}{\text{Face Value} - \text{Issue Cost}}$$

Preference shares are those shares which have a priority over equity shares in payment of dividends and also on the proceeds that are realized from the sale of company's assets in case of liquidation of the company.

Example: A Company is planning to issue 9% preference shares expected to be issued at Rs. 85 par value. The costs of issuing and selling the shares are expected to be Rs.3 per share.

The first step in finding out the cost of the preference capital is to determine the rupee amount of preference dividends, which are stated as 9% of the share of Rs. 85 par value. Thus 9% of Rs. 85 is Rs. 7.65. After deducting the floatation costs, the net proceeds are Rs. 82 per share.

$$\begin{aligned} \text{Thus, the cost of preference capital} &= \frac{\text{Dividend per share}}{\text{Net proceeds after selling}} \\ &= \frac{\text{Rs. 7.65}}{\text{Rs. 82}} = 9.33\% \end{aligned}$$

Now, the companies can issue only redeemable preference shares. Cost of capital for such shares is that discount rate which equates the funds available from the issue of preference shares with the present values of all dividends and repayment of preference share capital. This present value method for cost of preference share capital is similar to that used for cost of debt capital. The only difference is that in place of 'interest', stated dividend on preferences share is used. The cost of preference capital which is redeemable is the value of K_p in the following equation:

$$= \sum_{t=1}^n \frac{D}{(1 + K_p)^t} + \frac{R}{(1 + K_p)^n}$$

An approximation of K_p is

$$K_p \cong \frac{D + (R - NP)/N}{(R + NP)/2}$$

Where

- K_p = Cost of Preference Capital
- D = Dividend paid on each preference share
- R = Redemption Value
- NP = Net proceeds
- N = Redemption period

5.6.3 Cost of Equity Capital

Just like the other sources of Capital, Equity also has its own cost. Simply because the owner has brought in the capital, we cannot presume it to be free. In the corporate world, companies are floating with the contributions from shareholders. For any investor to buy the shares of the company, he should have some incentive, which is called '**return on investment**'. This return on the capital contributed by the investors can be treated as the cost of capital of Equity. It is exactly in this sense; authors like Walker and Van Horne defined the term Cost of Equity.

“Cost of equity capital is the cost of the estimated stream of net capital outlays desired from equity sources” E.W. Walker.

According to James C. Van. Horne, cost of equity capital can be thought of as the rate of discount that equates the present value of all expected future dividends per share, as perceived by investors at the margin as in the current market price per share.

In a nutshell, it is the discount rate which equates present value of all expected dividends in future with net proceeds per share or current market price. It represents the minimum rate of return that must be earned on new equity stock financed investment in order to keep the earnings available to the existing residual owners of the firms unchanged.

Cost of equity capital is by far the most difficult to measure, because of the following reasons:

- i) The cost of equity is not the out-of-pocket cost of using equity capital.
- ii) The cost of equity is based upon the stream of future dividends as expected by shareholders (very difficult to estimate).
- iii) The relationship between market price and earnings is known. Dividends also affect the market value (which one is to be considered is also the issue).
- iv) Since Equity Shares are traded on the stock exchanges, the price differentials are used to compute the cost of equity. The prices of Equity Shares on the exchanges fluctuate for a variety of reasons, many a time, beyond the control of the company.

Methods of computing cost of Equity Capital

The following are the approaches to the computation of cost of equity capital:

- a) **E/P Ratio Method:** Cost of equity capital is measured by earning-price ratio. Symbolically,

$$K_d = \frac{E_0}{P_0} \times 100$$

Where,

- K_d = Cost of Equity Capital
 E_0 = Current Earnings per share
 P_0 = Current Market Price per share

The limitations of this method are:

- Earnings do not represent real expectations of shareholders.
- Earnings per share are not constant.
- Earnings have diverse connotations.

The method is useful in the following circumstances:

- The firm does not have debt capital.
 - All the earnings are paid to the shareholders.
 - There is no growth in earnings.
- b) **E/P Ratio + Growth Rate Method:** This method considers growth in earnings. A period of 3 years is usually being taken into account for growth. The formula will be as follows:

$$K_e = \frac{E_0(1+b)^3}{P_0}$$

Where,

$(1+b)^3$ = Growth factor, where b is the growth rate as a percentage and is Estimated for a period of three years.

Example: A firm has Rs. 5 EPS with 10% growth rate of earnings over a period of 3 years. The current market price of equity share is Rs. 50.

$$\begin{aligned} &= \frac{5(1+.10)^3}{50} \\ &= \frac{1.331}{10} \\ &= 13.31\% \end{aligned}$$

- c) **D/P Ratio Method:** Cost of equity capital is measured by dividends-price ratio.

Symbolically,

$$K_e = \frac{D_0 \text{ (Dividend per share)}}{P_0 \text{ (Market price per share)}} \times 100$$

Example: The market price of equity share is Rs. 15 and dividend rate is 15% (Par value Rs.10 per share)

$$\frac{\text{Rs. 1.5}}{\text{Rs. 15}} \times 100 = 10\%$$

This method can estimate the Cost of Equity Capital under the following conditions:

- i) The k remains unchanged.
- ii) The investors give importance to dividend.
- iii) The investors purchase the shares at par value.

iv) The dividends declared are constant overtime.

In actual practice, dividends are never constant. No company can declare dividends at a constant rate. Variations in the dividends are common. In such a situation, the following method would be quite suitable.

Under this method, the future dividend stream of a firm, as expected by the investors, are estimated. The current price of the share is used to determine shareholder's expected rate of return. Thus, if K_e is the risk-adjusted rate of return expected by investors, the present value of future dividends, discounted by K_e would be equal to the price of the share. Thus,

$$P = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_n}{(1+K_e)^n}$$

Where,

P = price of the share

$D_1 \dots D_n$ = dividends in periods 1, 2, 3, ..., n,

K_e = the risk adjusted rate of return expected by equity investors.

Given the current price P and values for future dividends ' D_t ', one can calculate K_e by using IRR procedure. If the firm has maintained some regular pattern of dividends in the past, it is not unreasonable to expect that the same pattern will prevail in future. If a firm is paying a dividend of 20% on a share with a par value of Rs. 10, its market price will be Rs. 20, then

$$\begin{aligned} P &= \frac{D}{K_e} \\ 20 &= \frac{2}{K_e} \\ K_e &= \frac{2}{20} = 10\% \end{aligned}$$

d) **D/P + Growth Rate Method:** This method is comparatively more realistic as

- i) it considers future growth in dividends, and
- ii) it considers the capital appreciation.

This method assumes that the value of a share is the present value of all anticipated dividends, which it will give over an infinite time horizon. The firm is here viewed as a going concern with an infinite life.

Thus,

$$P_0 = \frac{D_1}{K_e - g} \text{ or } K_e = \frac{D_1}{P_0} + g$$

Where,

P_0 = current price of the equity share

D_1 = per share dividend expected at the end of year 1

K_e = risk adjusted rate of return expected on equity shares.

g = constant annual rate of growth in dividends and earnings.

The equation indicates that the cost of equity share can be found by dividing the dividend expected at the end of the year 1 by the current price of the share and adding the expected growth rate.

Example: Raj Textiles Ltd. Wishes to determine its cost of equity capital, K_e . The prevailing market price of the share is Rs. 50 per share. The firm expects to pay a dividend of Rs. 4 at the end of the year 2021. The dividends paid on the equity shares over the past six years are as follows:

Year	Dividend (Rs.)
2020	3.80
2019	3.62
2018	3.47
2017	3.33
2016	3.12
2015	2.97

The firm maintained a fixed dividend payout from 2010 onwards. The annual growth rate of dividends, g , is approximately 5 per cent. Substituting the data in the formula.

$$\begin{aligned}
 \text{Rs. } 50 &= \frac{\text{Rs. } 4}{K_e - 0.05} \\
 K_e &= \frac{\text{Rs. } 4}{\text{Rs. } 50} + 0.05 \\
 &= 0.08 + 0.05 = 13\%
 \end{aligned}$$

The 13% cost of equity share represents the return expected by existing shareholders on their investment so that they should not disinvest in the share of Raj Textiles Ltd. and invest elsewhere.

- e) **Realized Yield Method:** One of the difficulties in using D/P Ratio and E/P Ratio for finding out K_e is to estimate the rate of expected return. Hence, this method depends on the rate of return actually earned by the shareholders. The most recent five to ten years are taken, and the rate of return is calculated for the investor who purchased the shares at the beginning of the study period, held it to the present and sold it at the current prices. This is also the realized yield by the investor. This yield is supposed to indicate the cost of equity share on the assumption that the investor earns what he expects to earn. The limiting factors to the use of this method are the additional conditions that the investors expectation do not undergo change during the study period, no significant change in the level of dividend rates occurs, and the attitudes of the investors towards the risk remain the same. As these conditions are rarely fulfilled,

the yield method has limited utility in actual practice. In addition, the yields often differ depending on the time period chosen.

- f) **Security's Beta Method:** A new dimension to the Finance literature was added after the contribution of William Sharpe on the Capital Markets and Portfolio Theory through his 'Capital Asset Pricing Model' in 1970s. In continuation to the contribution of Markowitz, Sharpe has hypothesized that risk can be categorized into: Systematic (market risk) and Unsystematic (specific) risk. While Systematic Risk cannot be diversified, Specific Risk (the security's risk) can be diversified away with efficient construction of diversified portfolio of securities, having diversified risk complexion.

In this context, Sharpe introduced the concept of 'Beta' to reflect the risk level of an individual security. He indicated that the expected return (E_r) (Which can be considered as the cost of equity capital) is comprised of two components as: risk free (or riskless) rate and risk premium. This risk premium is arrived at using the Beta of the security. Thus, Beta of a security is the 'risk attendant' to that security.

The beta co-efficient for a security (or asset) can be found by examining security's historical returns relative to the returns of the market. Since, it is not feasible to take all securities; a sample of securities is used. In United States, such compilation of beta co-efficient is provided by companies, such as Value Line or Merrill Lynch. In the Indian context, the BSE Sensex or NSE's Nifty is taken as indicative of the representative portfolio. The Capital Asset Pricing Model (CAPM) uses these betas co-efficient to estimate the required rate of returns on the securities. The CAPM specifies that the required rate on the share depends upon its beta. The relationship is:

$$K_e = \text{riskless rate} + \text{risk premium} \times \text{beta}$$

Where, K_e = expected rate of return (or the cost of Equity Capital).

The current rate on government securities can be used as a riskless rate. The difference between the long-run average rate of returns between shares and government securities may represent the risk premium. Beta co-efficient are provided by published data or can be independently estimated. For instance, Beta values of NIFTY 50 are computed and published by the Equity Research Organizations from time to time. They are calculated for diverse ranges varying from daily 1 Month to Monthly and for years.

A security's Beta indicates how closely the security's returns move in tandem with a diversified portfolio. A Beta of 1.0 for a given security means that, if the total value of securities in the market moves up by 10 percent, the stock's price will also move up, on the average by the 10 percent. If security has a beta of 2.0, its price will, on the whole, rise or fall by 20 per cent when the market rises or falls by 10 per cent. A share with -0.5 beta will rise by 10 percent, when the market drops by 20 percent.

A beta of any portfolio of securities is the weighted average of the betas of the securities, where the weights represent the proportions of investments in

each security. Adding a high beta (beta greater than 1.0) security to a diversified portfolio increases the portfolio's risk, and adding a low beta (beta less than zero) security to a diversified security reduces the portfolio's risk.

Example: The risk-free rate of the Treasury Bill of RBI is 4% and the return of X Security is about 12% on an average of the past five years. The Beta of the security X is 1.4. Using the CAPM method; the K_e will be:

$$\begin{aligned} K_e &= 4\% + (12\% - 4\%) \times 1.4 \\ &= 4\% + (8\%) \times 1.4 \\ &= 4\% + 11.2\% \\ &= 15.2\% \end{aligned}$$

Whereas the Formula for computing Beta is:

$$\text{Beta} = \frac{\text{Covariance}}{\text{Variance}}$$

Covariance = Measure of a stock's return relative to that of the market return

Variance = Movement of the stock's return relative to its mean

The use of beta to measure the cost of equity capital is definitely a better approach. The major reason is that the method incorporates risk analysis, which other methods do not. However, its application remains limited perhaps because it is tedious to calculate Beta value. Nevertheless, as the competition intensifies and the availability of funds and their cost become a challenge, finance managers will need this or similar approaches.

Activity 5.4

1. A firm has Rs. 3 EPS and 10% growth rate of earnings over a period of 3 years. The current market price of equity share is Rs. 100. Compute the cost of equity capital.

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2. The current dividend paid by the company is Rs. 5 per share, the market price of the equity share is Rs. 100 and the growth rate of dividend is expected to remain constant at 10%. Find out the cost of capital.

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3. A firm issues 8% non-redeemable preference shares of Rs. 10 each for Rs. 1,00,000, underwriting costs are 6% of the sale price. Compute the cost of capital if shares are issued at discount of 2.5 percent and the premium of 5%.

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5.6.4 Cost of Retained Earnings

Corporate managers and some analysts normally consider the funds retained in the firm as cost free funds, because it does not cost anything to the firm to make use of a part of its earnings not distributed to the shareholders. However, this is not true. It definitely costs the shareholders something and this is an opportunity cost representing sacrifice of the dividend income which the shareholders would have otherwise received, if invested the same elsewhere to earn a return thereon. Thus, the minimum cost of retained earnings is the cost of equity capital (K_e).

Ezra Solomon suggested the concept of external yield to measure cost of retained earnings. Algebraically, the approach can be explained as:

$$= K_e (1-TR) (1-B)$$

Where

K_e = Cost of equity capital based on dividend growth methods

TR = Shareholders' Tax Rate

B = Percentage Brokerage Cost

Example:

A firm's cost of equity capital is 12% and Tax rate of majority of shareholders is 30%. Brokerage is 3%.

$$= 12\% (1-0.30) (1-0.03)$$

$$= 8.15\%$$

5.7 WEIGHTED COST OF CAPITAL

Weighted cost of capital, also known as composite cost of capital, overall cost of capital or weighted marginal cost of capital, is the average of the costs of each source of funds employed by the firm, properly weighted by the proportion they hold in the capital structure of the firm.

Choice of Weights

The weights to be employed can be book values, market values, historic or target. Book value weights are based on the accounting values to assess the proportion of each type of fund in the firm's capital structure. Market value

weights measure the proportion of each type of financing at its market value. Market value weights are preferred because they approximate the current value of various instruments of raising funds employed by the company.

Historic weights can be book or market weights based on actual data. Such weights, however, would represent actual rather than desired proportions of various types of capital in the capital structure. Target weights, which can also be based on book or market values, reflect the desired capital structure proportions. In most of the firms, capital structure may not be much different from 'optimal' or desired capital structures. The cost of capital in both the cases will be mostly similar. However, from a strictly theoretical point of view, the target market value weighting scheme should be preferred.

Marginal weights are determined on the basis of financing mix if additional new capital is to be raised for investments. The new capital raised will be the marginal capital. The proportions of new capital raised will be the marginal weights.

Activity 5.5

- 1) How is the cost of retained earnings computed?

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- 2) List out three types of weights which may be used for computing weighted average cost of capital of the firm.

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- 2) What is Weighted Average Cost of Capital?

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3) The following details are available:

Equity (Expected Dividend 12%)	Rs.10,00,000
Tax Rate	50%
10% Preference	Rs.5,00,000
8% Loan	Rs.15,00,000

You are required to calculate Weighted Average Cost of Capital.

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Computation of the Weighted Cost of Capital

Example-1: A firm has the following capital structure and after tax costs for the different sources of funds used:

Source of Funds	Amount Rs.	Proportion %	After tax cost %
Debt	20,00,000	20	4.50
Preference Shares	10,00,000	10	9.00
Equity Shares	30,00,000	30	11.00
Retained Earnings	40,00,000	40	10.00
	1,00,00,000	100	

On the basis of book value, the cost of equity capital will be calculated as follows:

Method of Funds	Proportion%	Cost %	Weighted cost %
Debt	20	4.50	0.90
Preference Shares	10	9.00	0.90
Equity Shares	30	11.00	3.30
Retained Earnings	40	10.00	4.00
			9.10%

Example - 2: Quality products is a consumer products company with well-established brand names. The cost of capital of quality products is estimated at the end of 2020 for use in evaluating investment proposals in 2021. The data for Quality Products Ltd. are as follows:

Source	Book Value Rs.	Market Value Rs.	Current Interest rate %
Debentures (7 ¹ / ₂ %)	45	29	13.2
Debentures (9 ¹ / ₂ %)	50	42	13.2
Debentures (14%)	75	78	13.2
Other debt	210	192	13.2
Total debt	380	341	13.2
Preference shares (7%)	20	10	14.0
Equity shares	720	824	

Equity Share Data Years

	2015	2016	2017	2018	2019	2020
Dividend per share	1.45	1.60	1.77	2.05	2.28	2.48
Earnings per share	2.97	3.73	4.21	4.83	4.86	4.95
Price per share	24.00					50.00

Explanatory Notes

- Interest rates on the three debenture issues were set at the rate (13.2%) on the recently issued debentures of the firm which is selling close to par. This was considered to be the best estimate.
- Other debt includes different types of loans from financial institutions and other privately placed debentures.
- Market value is based on interest rates provided in the firm's annual report.
- Preference share is Rs.100 per current market price is Rs.50 per share.

Since the firm's dividend and earnings have been growing steadily since, 2015, the constant growth model can be used to estimate cost of equity. Though dividends have grown at a slightly higher rate than earnings, one may assume that shareholders would expect them to grow at the same rate of earnings (10.8%). It is also assumed that, on the basis of the past record that the shareholders expect a dividend of Rs. 2.60 in 2021. Thus:

$$\begin{aligned}
 K_e &= \frac{D}{P} + g \\
 &= \frac{\text{Rs. 2.60}}{\text{Rs. 50}} + 0.108 \\
 &= 16\%
 \end{aligned}$$

If the investors expect the dividends to grow at the higher rate (11.3%), the cost of equity capital works out to 16.5%.

- A. **Using Book Value of Weights:** The Weighted Average Cost of Capital of the Quality products would be as follows:

Rs.'0000

Source	Book Value	Weight	Cost	Weight X Cost
Debentures (All kinds)	170	15.1	7.1	1.07
Other Debt	210	18.8	7.1	1.33
Preference Shared	20	1.8	14.0	0.25
Equity	720	64.8	16.0	10.29
Total	1,120	100.0		12.94%

Explanatory Notes:

- Cost of Debentures and other debt is taken as 7.1%, as adjusted to the tax rate of 46% ($13.2 - [1.0.46] = 7.1\%$)
- The growth in dividends (g) is taken as 10.8% and thus cost of equity as 16%.

- B. **Using Market Value of Weights:** Under this method, the Weighted Average Cost of Capital of the Quality products would be as follows:

Rs.'0000

Source	Book Value	Weight	Cost	Weight X Cost
Debentures	149	12.7	7.1	0.9
Other Debt	192	16.3	7.1	1.2
Preference Shared	10	0.8	14.0	0.1
Equity	824	70.1	16.0	11.2
Total	1,175	100.0		13.4%

- C. **Applying the beta method**, we obtain a somewhat higher number. Beta for Quality Products is assumed to be 0.85. Interest rate on government bonds (riskless rate) in 2020 was say, 12 per cent. The market risk premium is 6%.

Thus

$$K_e = \text{Riskless rate} + \text{Risk premium} \times \text{beta}$$

$$= 12\% + 6\% \times 0.85$$

$$17.1\%$$

Thus, cost of capital for Quality Products Ltd:

	Amount Rs.	Weight	Cost	Weight x Cost
Debt	341	0.29	7.1	2.1
Preference Shares	10	0.01	14.0	0.1
Equity Shares	824	0.70	17.0	11.9
Total	1175	1.00	17.0	14.1

Weighted Average Cost of Capital: 14.1%

Explanation

- Market values of debt, preference and equity shares are used.
- Current interest rate on debt is adjusted for tax rate of 46 per cent, which is the firm's effective rate $13.2\%(1-0.46)=7.1\%$
- Current preference dividend rate of 14% is used.

Activity 5.6

- 1) Compare Beta value of equity shares of any one company listed on Indian stock exchanges and list out the problems you faced in this regard.

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- 2) Compute overall cost of capital of an Indian company of your choice. List out the steps you took for this purpose and the problems faced by you.

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- 3) Try to know from the Finance Manager of an Indian Company:

- i) Do they compute the overall cost of capital of their company?

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ii) For what purpose?

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iii) If not, why not?

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5.8 SOME MISCONCEPTIONS ABOUT COST OF CAPITAL

The cost of capital is a central concept in financial management linking the investment and financing decisions. A few misconceptions in this regard are as follows:

- i) The concept of cost of capital is academic and impractical.
- ii) It is equal to the dividend rate.
- iii) Retained earnings are either cost free or cost significantly less than external equity.
- iv) Depreciation generated funds have no cost.
- v) The cost of capital can be defined in terms of an accounting-based manner.
- vi) If a project is heavily financed by debt, its weighted average cost of capital is low.

All these misconceptions are truly baseless and remain as misconceptions only. No businessman can proceed further without having the idea about the cost of funds, he is going to mobilize. As a matter of fact, the viability of a project or investment decision should be assessed only after taking into consideration the cost of capital. Invariably, the funding agencies evaluate the project proposals only from the point of view of cost of capital. If the cost is high and return is low, there is no point in accepting such a project proposal. That the concept of cost of capital is purely academic in nature is highly unfounded. It is more practical in its application and there shall be no financial decision making without regard to the cost of capital.

5.9 SUMMARY

The cost of capital of a firm is mainly used to evaluate investment projects. It represents minimum acceptable rate of return on new investments. The basic factors underlying the cost of capital for a firm include the degree of risk associated with the firm, the prevailing interest rates, the taxes it must pay, and the supply and demand of various types of financing.

In estimating the cost of capital, it is assumed that (1) the firms are acquiring assets which do not change their business risk, and (2) these acquisitions are financed in such a way as to leave the financial risk unchanged. In order to estimate the cost of capital, we must estimate rates of return required by investors in the firm's securities, including borrowings, and average those rates according to the market values of the various securities currently outstanding. Before we can arrive at the firm's overall cost of capital, we need to compute cost of each source and then aggregate the same.

While the cost of debt and preference capital is the contractual interest/dividend rate (adjusted for taxes), the cost of equity capital is difficult to estimate. Broadly, there are six approaches to estimate the cost of equity, viz., the E/ P method, E/P + Growth method, D/P method, D/P + Growth method, realized yield method and using the Beta co-efficient of the share. Weighted cost of capital is computed by assigning book weights or market weights. Not only from the point of view of academics and from the point of view of companies too, the concept and computation of cost of capital is significant and highly relevant.

5.10 KEY WORDS

Cost of Capital is the minimum rate of return that must be earned on investment to maintain the value of firm unchanged.

Cost of Debt is the interest rate paid to the borrowers, after adjusting the same with tax rate.

Cost of Equity Capital is the discount rate which equates present value of all expected dividends in future with net proceeds per share / current market price.

Business Risk is a possibility that the firm may not be able to operate successfully in the market.

Financial Risk is the possibility that the firm may not earn sufficient profits to make payment of interest on loans and/or to pay dividends.

Yield to Maturity is the discount rate that equates the current price of the debenture with the present value of future cash flows.

Beta is a measure risk attendant with the security.

5.11 SELF ASSESSMENT QUESTIONS/ EXERCISES

- 1) Why is the cost of capital considered very significant in financial decision making?
- 2) Distinguish between Business Risk and Financial Risk. Cite few examples.
- 3) How is the Cost of Debt Capital ascertained? Give examples.
- 4) You have just been communicated, “Since we are going to finance this project with debt, its required rate of return should only be the cost of debt”. Do you agree or disagree? Explain.
- 5) How will you calculate the Cost of Preference Share Capital?
- 6) Which method of calculation to find the cost of equity shares would be most appropriate for the following firms:
 - a) A profitable firm that has never paid a dividend but has had steady growth in earnings.
 - b) An electricity company that has paid a dividend every year for the last twenty years.
 - c) A firm that has grown very rapidly until two years ago, when capacity problems in the industry produced severe price cutting in the firm’s major product line. At the same time management decided to invest heavily in facilities to manufacture a new product. So far, the manufacturing process has not worked properly. The firm lost Rs. 5 crore last year, and the price of its equity share has dropped by 20percent.
- 7) How would you find the cost of capital for proprietorship or partnership firm? Can you think of any ways to do this? List them.
- 8) “Retained earnings are cost free” comment.
- 9) Compute the cost of capital for the following: Assume the tax rate is 40 percent.
 - a) A seven-year debenture with a coupon interest of 10 per cent. The debentures mature in five years and have a current market price of Rs.90 as against its par value of Rs.100.
 - b) A preference share pays 7 per cent dividend. Par value is Rs. 100 per share and its current market price is Rs.80.
 - c) The historical average rate of return earned by equity shareholders of the firm C has been about 17% per year until very recently. The dividends of the firm have grown at an average rate of 13% per year over the same period. The financial Express and another financial fortnightly have issued a report indicating the problems of the firm with government’s regulatory agencies and forecasted that dividends and earnings of the firm will grow at no more than the overall growth rate of the economy which is 5 per cent. The dividends are likely to be Rs.... per share. The

price of the firm's share adversely reacted to their port dropping from Rs.100 to Rs.50.

- 10) With the help of the following data, compute the Weighted Average Cost of Capital using Book value of weights and Market value of weights.

Source	Book Value	Market Value
Equity Shares (Rs.100 each)	100	200
9% Cumulative Preference Shares	40	50
11% Debentures	160	180
Retained Earnings	40	---
	340	430

Additional Information:

- i) The company is declaring dividend at the rate of 25% at present and is expected to grow by 5 per cent every year.
- ii) The Applicable Tax Rate is 30%.
- iii) The personal Income Tax Rate for shareholders is 20%.

5.12 FURTHER READINGS

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Appendix 2.1: Share Valuation with Constant Growth in Dividends

Assuming so the most recent dividend, and that g is the growth rate in dividend

$$P_o = \frac{D_o(1+g)^1}{(1+K_e)^1} + \frac{D_o(1+g)^2}{(1+K_e)^2} + \frac{D_o(1+g)^a}{(1+K_e)^a} \dots\dots\dots(1)$$

Multiplying each side of the equation by $(1+K_e)/(1+g)$ and subtracting the resulting equation from (1),

$$\frac{P_o(1+K_e)}{1+g} - P_o = D_o - \frac{D_o(1+g)^a}{(1+K_e)^a} \dots\dots\dots(2)$$

As K_e is assumed to be greater than g , the second term on the right hand side of (2) is zero, Thus

$$P_o \left(\frac{1+K_e}{1+g} - 1 \right) = D_o \dots\dots\dots(3)$$

$$P_o (K_e - g) = D_o (1 + g)$$

$$P_o = \frac{D_1}{K_e - g} \dots\dots\dots(4)$$

- **Premium for Financial Risk:** It refers to the risk arising out of pattern of capitalization. In general, it may be said that a firm having a higher debt content in its capital structure is riskier as compared to a firm which has a comparatively low debt content.

Besides financial risk and business risk, the following risks also affect the cost of capital.

- **Premium for Business Risk:** Business risk is the possibility that the firm will not be able to operate successfully in the market. Greater the business risk, the higher will be the cost of capital. It is generally determined by the capital budgeting decisions.

UNIT 6 INVESTMENT APPRAISAL METHODS

Objectives

The objectives of this unit are to:

- Appreciate the need for proper Investment Appraisal.
- Explain the different Factors affecting Investment Decisions
- Discuss the different methods of Appraising Capital Projects, and their relative merits and demerits.
- Describe the limitations of Appraisal Techniques

Structure

- 6.1 Introduction
- 6.2 Need for Investment Decisions
- 6.3 Factors affecting Investment Decisions
- 6.4 Types of Investment Proposals
- 6.5 Investment Appraisal Process
- 6.6 Investment Appraisal Methods
 - 6.6.1 Traditional Methods
 - 6.6.2 Discounted Cash Flow Methods
- 6.7 Depreciation, Tax, and Inflows
- 6.8 Limitations of Appraisal Techniques
- 6.9 Summary
- 6.10 Self Assessment Questions/Exercises
- 6.11 Further Readings

6.1 INTRODUCTION

A proper decision-making in capital investment is one of the most crucial areas of financial management. The successful running of any business firm is dependent on the allocation of resources in such a way that benefits or the highest feasible returns are realized. The capital budgeting is the word used in financial management to describe the investment decision. In the corporate world, investment decisions and capital budgeting are not regarded separate acts. As a result, investment decisions are driven by the question of whether increasing capital assets today will boost revenues enough to cover costs in the future. As a result, investment decisions include commitments of money resources at various times in the hope of future economic rewards.

An evaluation of each investment project is required to verify that the resources invested will yield the anticipated results in the future. If financial resources were plentiful, it would be conceivable to accept a number of

investment ideas that met the approval or acceptability criteria. Since resources are limited, a decision must be taken by weighing the pros and cons of alternative investment options. This would make it easier to identify comparably superior alternatives while keeping in mind the limited resources available. It is obvious that certain procedures should be used while evaluating investment bids. We will describe the various appraisal methods and their relative benefits in this Unit.

Capital Budgeting Vs. Current Expenditure.

A capital investment project can be distinguished from current expenditure by two features:

- a) The capital budgeting projects are relatively large.
- b) A significant period (more than one year) elapses between the investment outlay and the receipt of the benefits.

As a result, most large and medium-sized businesses have created unique protocols and methods for dealing with these issues. A methodical approach to capital budgeting entails the following:

- a) The formulation of long-term goals
- b) The creative search for and identification of new investment opportunities
- c) Classification of projects and recognition of economically dependent proposals
- d) The estimation and forecasting of current and future cash flows
- e) The controlling of expenditures and careful monitoring of crucial aspects of project execution
- f) A set of decision rules which can differentiate acceptable from unacceptable alternatives is required.

6.2 NEED FOR INVESTMENT DECISIONS

The necessity for investment decisions arises in order to achieve the firm's long-term goals, such as; survival or expansion, maintaining market share, and maintaining leadership in a specific area of economic activity. As a result, the company may wish to make an investment decision in order to take advantage of economic opportunities that may develop due to the following factors:

- i) Expansion of the manufacturing process to fulfil current excessive demand in the local market, as well as to take advantage of international markets and economies of scale.
- ii) In order to take advantage of technical breakthroughs, reduce product costs, and improve labour efficiency, it may be essential to replace a current asset, plant, machinery, or facility.

- iii) Another essential aspect that establishes the necessity for investment decisions is whether to buy, rent, or lease a specific item.

6.3 FACTORS AFFECTING INVESTMENT DECISIONS

Ezra Solomon claims that the following three types of data are needed to make the best investing decisions:

- i) Calculate the proposed project's capital outlay and projected earnings.
- ii) Capital availability and cost-cutting considerations, and
- iii) A proper set of criteria for selecting projects for execution in order to maximise the return.

i) Estimation of Capital Outlays and Future Earnings:

When estimating future cash flows emanating from current investment decisions, the management of the firm is led by a number of factors. If the time horizon over which the benefits accrue is more than one year, the resources committed are referred to as capital investment, and the money spent is referred to as capital expenditure. (i) advance spending, (ii) land and site expenditure, (iii) building costs, (iv) machines and tools, (v) erection of equipment, (vi) training expenditure, (vii) franchise cost, (viii) inventory cost are some of the most common sorts of such expenditures. These expenses are related to establishing a facility and determining whether it is ready to operate. Further, it requires certain amount of money to meet the operating costs. The broad categories of such costs are as follows:

- a) Labour cost,
- b) Repairing charges and maintenance cost,
- c) Rent and royalty payments,
- d) Insurance charges,
- e) Stationery cost,
- f) Payment of tax and duties, and
- g) Fuel and power costs.

In addition to the aforementioned kinds of costs, the depreciation provision and interest charges are two further types of annual expenditure. Financing decisions are linked to investment decisions. Acceptance of investment proposals will be contingent on how they will be funded.

ii) Sources of Capital:

The sources of capital can be divided into the following categories:

- a) **Internal Capital:** It is generated by the firm itself, which includes retained profit, depreciation provision, taxation provision and other reserves.

b) **External Capital:** If the firm is in the need of more capital that is a variable from the internal sources, it may raise the capital from external sources; the external capital can be further classified as:

- **Short-term Capital:** It is needed to meet day to day expenses of the business operations (working capital). Usually this capital is meant for uses of less than one year duration.
- **Long-term Capital:** It is needed to meet the requirements of fixed capital formation. This capital is used for the purpose for more than one year requirements.

iii) Selection of Projects:

It is critical for the proper running of any firm that funds be invested in such a way that advantages or the greatest potential returns or maximum returns are realized. The profitability of an investment is a critical aspect in making investment decisions.

6.4 TYPES OF INVESTMENT PROPOSALS

The terms 'investment choice,' 'investment projects,' and 'investment proposal,' according to financial management language, are often connected with the deployment of long-term resources. What exactly is a "long term"? There is no hard and fast rule to define it, but it is defined by common practice and in compliance with financial institutions' financing policies, practices, and regulations and banks a period of ten years and above is generally treated as long term.

Long-term financial investments may be required for the following reasons:

- Expansion of operation
 - Diversification in operations
 - Replacement/Modernization of plant and machinery
 - Research and Development
- a) **Expansion:** Currently, a manufacturing plant can produce one lakh units per year. If it plans to expand output to satisfy demand, it will certainly require more capital. As a result, the total variable cost will rise, and the current assets will rise as well. As a result, working capital financial resources will have to be raised. If the current production is less than the capacity, no new investment is required. If the present infrastructure, plant and machinery, and other permanent or fixed assets are insufficient, the proposal to increase production will necessitate a long-term investment of capital.
- b) **Diversification:** The management of a company, such as the Indian Tobacco Company (ITC), opted to diversify its output into other lines of business by adding a new field of hoteliering to its core business. Philips, best known for its radios and light bulbs, has expanded its product line to include additional electrical appliances and television sets. This

diversification process would necessitate the employment of substantial capital resources for long-term investment.

- c) **Replacement:** The machinery that are utilised in production may wear out or become obsolete as a result of new technology. The enterprise's productive capacity as well as its competitiveness may be harmed. Some money may be required for the modernization of a certain class of machines, as well as the renovation of the entire plant or structure, among other things. Modernization and renovation will be used instead of total replacement to make them more efficient and productive. As a result, cash will be invested for the long-term, and money will be required for replacement if renovation/modernization is not desirable or practical.
- d) **Research and Development:** There has been a growing recognition that applying new and more complex production and management approaches can improve the efficiency of production and overall operations.

6.5 INVESTMENT APPRAISAL PROCESS

Investment appraisal is significant for since it is a type of fundamental analysis that can reveal a whether or not a fund investment has long-term potential. You have probably noticed that the investment proposals: (i) entail huge sums of money; (ii) entail a higher level of risk due to unforeseen circumstances; and (iii) frequently imply irreversibility once an investment decision is made. In light of these considerations, the work of evaluating investment proposals is critical in financial management. The following need to be considered before appraisal is taken up:

- The amount and timing of initial investment outlays
- The amount and timing of subsequent investment outlays
- The economic life of the project
- Salvage value at the end of the project
- The amount and timing of cash inflows

i) **Initial Investment Outlay:**

This is the total amount of money required to carry out the proposal. It comprises design, survey, and consultant expenses, as well as working capital costs like stock maintenance and contingency reserves. The availability of credit from suppliers will reduce the amount of additional working capital necessary.

ii) **Subsequent Investment Outlay:**

Maintenance, replacement, and upgrading costs should be recognised as outflows within the time frame in which they are scheduled to occur.

iv) ***Economic Life of a Project:***

A project's economic life must be distinguished from the life of a single asset. A building's lifespan may be sixty years, a plant's lifespan could be fifteen years, and certain equipment's lifespan may be as little as five years. The duration of the 'earnings flow' created by the project determines the project's economic life.

The economic life may end:

- a) When the cost of replacement or remodeling becomes unfeasible in comparison to the expected advantages.
- b) When the viability of the project is adversely affected due to obsolescence,
- c) When rising maintenance costs exceed the estimated disposal value; and
- d) When the development of new technology necessitates new investment.

iv) ***Salvage Value:***

Some equipment may have some value for the company at the conclusion of the project's life cycle, or it may have a projected sale value. At the end of the project's existence, this sum will be treated as an inflow.

v) ***Operating Cash Flows:***

Three main areas are to be considered here:

- a) ***Sales Revenue:*** It is determined by the number of units sold and the unit selling price. Any underestimate of sales revenue might have a significant impact on an investment proposal's evaluation. The additional or incremental revenues created by every investment opportunity must be considered while evaluating it. It is also possible to invest in order to lower operating costs. For example, an older plant and machinery or equipment could be replaced with a modern one that is more cost-effective to operate. The new equipment may be more efficient (or productive), or it may require less electricity usage or maintenance expenditures, for example. It should be highlighted that the final impact of cost-cutting equipment is the same as that of new equipment for expanding capacity, namely, an increase in overall revenue.
- b) ***Production Costs:*** The distinction between fixed and variable costs will be extremely useful in predicting cost behaviour. Only incremental costs must be taken into account.
- c) ***Other Direct Costs:*** These expenses will cover selling and promotion costs, as well as additional rent and other expenses. By allocating the aforementioned things period-by-period, the net inflow/outflow of cash can be calculated. It may appear that determining the net cash flow, or the difference between total outflow (amount to be invested) and inflow (net of Sales Revenue Expenditure + Salvage Value), is all that is

required to assess the financial viability of an investment project or to choose between two offers.

Illustration-6.1

(Rs. in thousands)

Year	Net Cash Flows	
	<i>Plan A</i>	<i>Plan B</i>
0	40	-360
1	150	200
2	200	300
3	220	400
4	230	450
5	370	600
Total	1210	1590

Only plan 'B' creates a total cash flow of Rs. 15,90,000, but proposal 'A' only generates Rs. 12,10,000, as shown in the above illustration. This alone will not assist us in making an informed decision unless we know the total investment required for each of the plans, as well as the time value of money and the desired acceptable rate of return on investment. Hence it will be useful to examine a few methods of assessing the return on investment.

6.6 INVESTMENT APPRAISAL METHODS

The investment appraisal methods or techniques for evaluation of investment proposals will help the company to decide the desirability of an investment proposal, depending upon their relative income generating capacity and rank them in order of their desirability. These methods provide the company a set of norms on the basis of which, either it has to accept or reject the investment proposal. Therefore, a sound appraisal method should enable the company to measure the real worth of the investment proposal. The appraisal methods should possess several good characteristics, which are mentioned as under:

Characteristics of a Sound Appraisal Method:

- It should help the company to rank the investment proposals in order of their desirability.
- It should provide a technique for distinguishing between an acceptable and non-acceptable project.
- It should provide a criterion to solve the problem of choosing among alternative projects.
- It should recognise the importance of time value of money; i.e., bigger benefits are preferable to smaller ones and early benefits are preferable to later benefits.
- It should provide the criteria for the selection of investment proposals.
- It should consider the pattern of cash flows.

Different methods of appraisal of investment proposals are grouped into two types:

- i) Traditional Methods:
 - Pay Back Period
 - Accounting Rate of Return
- ii) Discounted Cash Flow Methods:
 - Net Present Value
 - Internal Rate of Return
 - Profitability Index

6.6.1 Traditional Methods

a) *Pay Back Period*

Payback period method refers to the amount of time it will take for the complete amount invested to be recovered through net cash flow (after tax). Let us say you have invested Rs. 5 lakhs in a project with the following predicted net cash flows:

Illustration-6.2

Year	Incremental Cash Flow (Rs. in thousands)	
	Annual	Annual Cumulative
	(-) 500	(-) 500
1	185	(-) 315
2	125	(-) 190
3	140	(-) 50
4	170	120
5	180	300

The entire amount invested is evidently Rs. 5 lakhs. During the fourth year, this may be recovered. According to the calculations below, the payback period is 3.29 years (about three years and three and a half months):

$$P = E + B/C$$

Where,

- P stands for payback period.
- E stands for number of years immediately preceding the year of final recovery.
- B stands for the balance amount still to be recovered.
- C stands for cash flow during the year of final recovery.

The shorter the term, the better is the project. Early and certain results are preferable over longer-term forecasts that are more uncertain and questionable.

Calculating the payback technique is simple and straightforward. The

method's biggest flaw is that it disregards the timing and the amount of all cash inflows. The cash flows following the payback period are not considered. As a result, this method is ineffective for both absolute and comparative evaluation. Consider the following two projects as an example to illustrate this point:

Illustration-6.3

(Rs. in thousands)

<u>Project A</u>			<u>Project B</u>	
Years	Cash Flow	Cumulative cashflow	Cashflow	Cumulative cashflow
0	(-)700	(-) 700	(-) 700	(-) 700
1	100	(-) 600	400	(-) 300
2	200	(-) 400	300	(-) 0
3	300	(-) 100	200	(-) 200
4	400	300	100	300
5	500	800	—	
Payback period		3.25 years	2 years	

The investment in both the projects is Rs. 7 lakhs, which results in a negative cash flow in the zero year. The payback period for project B is clearly shorter, and as a result, it may be preferred. Project A is likely to be rejected because of its slow cash flow start. This strategy, as previously stated, disregards the entire benefits or cash inflows created by the projects. In the above illustration, Project A generates cash flows for a longer duration than Project B. Project B generates returns over a shorter period of time and at a faster rate. As a result, the payback technique focuses just on the liquidity component of the business, ignoring the project's total profitability. It is not advisable to rely only on this strategy due to its simplicity. Because this method has some use, it may be awarded the rank of a secondary or subsidiary criterion rather than being completely rejected. In this case, a maximum payback term may be established, and projects that surpass this timeframe may be rejected.

b) Accounting Rate of Return

This method of calculating the rate of return on investment is based on the company's financial accounting methods for calculating annual earnings. After depreciation and taxes, the net annual profits are calculated. The average of annual earnings so obtained is calculated based on the project's life cycle (number of years). The accounting rate of return also called the average rate of return is defined as

$$\frac{\text{Profit after tax}}{\text{Book value of the investment}}$$

(Amount in Rupees)

Years	Cash Flow (After tax)	Depreciation	Interest
1	13,000	6,000	400
2	11,000	6,000	400
3	9,000	6,000	400
4	6,400	6,000	400
5	6,000	6,000	400
Total	45,800	30,000	2,000

The investment is Rs. 30,000. Accounting rate of return will be equal to the average of net cash flow (after depreciation, taxes, and interest) as a percentage of investment.

$$\frac{(45,800 - 30,000 - 2,000) \times 1/5}{30,000} = 9.2\%$$

The return is calculated in the following using the original (initial) investment in the project, which is Rs. 30,000. Because the investment in this illustration is a depreciable asset with a five-year useful life and no salvage value, it could be argued that the investment base for calculating ARR should be the average investment, which is one-half of the initial investment, in this case Rs. 30,000/2 = 15,000. Based on an average investment, the ARR would be:

$$\frac{(45,800 - 30,000 - 2,000) \times 1/5}{15,000} = 18.4 \text{ Per cent}$$

The rate of return will be double the rate calculated on the original investment if there is no salvage value and the average investment is one-half the original investment.

This technique, like the Payback Method, overlooks the time value of cash flows because it does not account for the timing of revenue creation (first year, second year, etc.). Cash flow timing is an important factor to consider when making investment decisions. Higher earnings in the early years and lower earnings later in life cannot be compared to lower earnings in the early years and higher earnings later in life. As a result, the ARR technique has a fundamental flaw in that it ignores the quality or pattern of benefits as well as the time value of money. Further, it does not consider the scrap value of an asset (or project) at the end of its useful life. Finally, the calculation of profit is subject to varying practices. The attempts at window dressing and manipulation of accounting data have a distorting influence on the calculation of profit and consequently on the ARR. All these factors make ARR a less reliable method.

6.6.2 Discounted Cash Flow Methods

The Discounted Cash Flow (DCF) methods provide a more objective basis for evaluating and selecting an investment project. These methods consider

the magnitude and timing of cashflows in each period of a project's life. Thus, the discounted cashflow methods enable us to isolate the differences in the timing of cashflows of the project by discounting them to know the present value. The present value can be analyzed to determine the desirability of the project. These techniques adjust the cashflows over the life of a project for the time value of money. This principle underpins two methodologies for valuing investment projects. There are three different DCF methods. There are three different DCF methods. They are Net Present Value approach, the Internal Rate of Return approach and, the Profitability Index.

i) Net Present Value Method:

Understanding the compound rate of interest or the general compounding formula will help you calculate the net present value of future income. Assume that an amount of Rs. 100 (P) is invested for one year at a rate of interest (r) of 10% per annum. The investment at the end of one year will be equal to:

$$\begin{aligned} & P \left(1 + \frac{r}{100}\right)^n \\ &= 100 \left(1 + \frac{10}{100}\right)^n \\ &= 100 \left(1 + \frac{11}{100}\right)^{n=1} \\ &= 110 \end{aligned}$$

It is also possible to say that what was worth Rs. 110 a year ago is now only worth Rs. 100.

When the compounding formula is used to calculate the present value (PV) of a future stream of income over a number of years, the formula is reconstructed as

$$PV = \frac{P}{\frac{(1+r)^n}{100}}$$

Where,

P is the amount to be received in the future (number of years = n), and r denotes the annual interest rate. Let us say we want to know the PV of a cash flow of Rs. 500 that would be received at the end of five years at a 10% interest rate. The PV will be as follows:

$$= \frac{P=500}{(1+r=1.10)^{n=5}} = \frac{500}{(1+10)^5} = \text{Rs. 310.5}$$

Rather than wasting time with computations, look at Table-1 (at the end of this block), which shows the discount factor for 10% over a 5-year period in terms of the present value of one rupee. The value is 0.621. By multiplying it by Rs. 500 in predicted future earnings This income's PV will be 500 x 0.621= Rs. 310.5. If a person receives a series of similar amounts over a five-

year period, say Rs. 1,000 each year, the present value of these receipts can be calculated as follows:

Years	Amount (Rs.)	Present Value Factor @10%	Present Value (Rs.)
1	1,000	.909	909
2	1,000	.826	826
3	1,000	.751	751
4	1,000	.683	683
5	1,000	.621	621
			3790

Discounting is the practice of decreasing future values according to the parameters provided in order to determine the present value. Table-2 provides a straightforward technique of computing the present value when the annual cash flows to be received over a period of time are equal in amount, as in the aforementioned situation.

In Table-2, you may discover a factor of 3.790 in the 10% column for the line for 5 years using the aforementioned example. When you multiply it by 1,000, the present value is the same, which is Rs. 3,790, as estimated using the longer technique using Table-I. Table-2 contains factors that reflect the yearly present value of Rupees received for a particular number of years (this form of cash flows is commonly known as an annuity).

You will notice that by discounting the predicted yearly returns for each year the project has been evaluated, rather than a few years' return as covered under the Payback Method. We may calculate the PV of the aggregate inflows by adding the PV of the annual cash inflows for each year of the project's estimated life. This is easily comparable to the cash outflow required for investment today. If the total PV of cash inflow exceeds the current outflow, the investment plan can be acceptable. With the net present value method, the decision to accept or reject a proposal or to accept the superior one (with greater PV for the same investment) out of two or more proposals can be made more rationally. We may illustrate the method by comparing two projects.

Illustration-6.1

(Rs. in thousand)

Project	Initial Outlay	Net Cash Income (before depreciation but after Tax)							
		<i>Year</i>							
	<i>Rs.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
A	20,000	4	4	4	8	2	-	-	-
B	20,000	8	6	2	2	2	2	2	2

Assume a discount rate of 7%.

The firm can be assured of a surplus if the current value of the stream of net cash flow exceeds the capital expenditures. When comparing alternative projects, the one with the highest net present value (or positive net present value) will be chosen.

Year	Project A			Project B		
	Net Cash Income (Rs.)	Discount Factor*	PV (Rs.)	Net Cash Income (Rs.)	Discount Factor*	PV (Rs.)
1	4000	0.935	3,740	8000	0.935	7,480
2	4000	0.873	3,492	6000	0.873	5,238
3	4000	0.816	3,264	2000	0.816	1,632
4	8000	0.763	6,104	2000	0.763	1,526
5	2000	0.713	1,426	2000	0.713	1,426
6	-	-	-	2000	0.666	1,332
7	-	-	-	2000	0.623	1,246
8	-	-	-	2000	0.582	1,164
Total Present Value(Rs.)			18,026	21,044		
Initial Cost(Rs.)			20,000	20,000		
Net Present Value (Rs.)			(1,974)	1,044		

* Refer to Present Value Table

We utilised a discounting rate, often known as the 'cutoff' rate, 'hurdle' rate, or 'required rate of return', to calculate the NPV. When more than one investment proposal is to be evaluated and the funds available for investment are insufficient to accommodate all of the proposals, the discounting rate is very important. Is the discounting rate chosen at random or is there any rationale behind it? Should it be the present rate of return on capital employed, or the rate at which the firm would borrow or lend money? A business may set a target rate of return for valuing an investment that is not less than the cost (or interest rate) of the funds required for the investment.

However, it should be noted that monetary interest rates do not reflect the additional risks that a company may face. As a result, logically, the corporation should choose the rate of interest that best represents the project's risk, i.e., a rate that is likely to be close to, if not exactly equal to, the overall rate of return on capital employed. The NPV technique, in addition to assessing the time value of money, examines the total benefits of a proposed project over its lifetime. This strategy is very beneficial for choosing tasks that are mutually exclusive. Acceptance of proposals with positive net present values is anticipated to have a favourable impact on stock market prices.

The NPV approach is harder to compute and understand than the payback or ARR approaches. It can be challenging to decide which discounting rate to apply when computing present values. The choice of a discounting rate has a significant impact on a project's attractiveness. An attractive project can

become an unattractive one if the rate changes, and vice versa. The NPV approach may not provide reliable findings for projects with varying outlays. It is also possible that it will not produce good results if the projects in the competition have various lifespans. If all other factors are equal, a project with a shorter payback period would be preferable.

Activity-6.1

- a) How much money would you have to put into a savings account today to have Rs. 4,000 at the end of five years assuming the bank offers a 5% half-yearly return? How much would you need to put down if you desired Rs.10,000 in five years?

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- b) If you deposit Rs. 1,000 today and the bank pays an annual interest rate of 11%, how much money would you have in a Fixed Deposit Account after seven years? If you deposited Rs.4,500 today, how much would you have after seven years?

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- c) Suppose you have won a prize in a lottery; you have the opportunity to pick one of the two prizes?

Prize A: Rs. 50,000 a year for the next ten years, paid on December 31 of each year.

Prize B: Rs. 2,50,000 cash paid today, 'January 1.

Which award would you choose if both rewards were tax-free, and you could earn a 6% annual interest rate on your money (also tax-free)?

Which prize would you choose if you could double your money's value? At what interest rate do you think the two rewards are worth the same to you?

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ii) Internal Rate of Return:

The Internal Rate of Return is another way for evaluating investment ideas that falls within the Discounted Cash Flow methods. Using this method, we can calculate the discounting rate at which the sum of all future cash inflow PVs equals the proposal's current cash outflows. The illustration below will help you understand this method:

Illustration-6.6

Year	Net Cashflow	Present Value of Net Cash Flow			
		At Discount Rate	20%	At Discount Rate	10%
		Discount Factor	Rs.	Discount Factor	Rs.
0	-100	1.000	- 100.00	1.000	(-) 100.00
1	40	0.833	33.30	0.909	36.40
2	35	0.694	24.30	0.826	28.90
3	30	0.579	17.40	0.751	22.50
4	25	0.482	12.10	0.683	17.30
5	20	0.402	0.621	12.40	
			(-)4.90		17.30

You can see that at a discount rate of 20%, the PVs (Rs. 95.10) of future cash inflows are Rs. 4.90 less than the current outflow of an investment of Rs. 100. At a 10% discount rate, the total PVs of future cash inflows are Rs. 17.30 higher than the original cash outlay. The rate of discount will be found by interpolating between the two aforementioned rates of 20% and 10% in order to equalize the inflows and outflows. This can be accomplished in the manner outlined below:

$$\text{IRR} = \text{LRD} + \frac{(\text{NPVL})}{\text{PV}} \times \text{R}$$

Where,

IRR is the Internal Rate of Return

LRD is the Lower rate of discount.

NPVL is the Net Present Value at a lower rate of discount (i.e., differences between present values of cash inflows and present value of cash outlay or outflows).

PV is the difference in present values at lower and higher discount rates.

R is the difference between two rates of discount.

Substituting the values, we get:

$$\text{IRR} = 10 + \frac{(17.30)}{(22.20)} \times 10 = 17.8$$

If a discount rate of 17.8 percent is used, the two inflows will be equal. Clearly, if this discount rate is larger than the target rate or the interest rate used to calculate the cost of funds, the cost of funds will be higher, the investment project should be acceptable.

IRR through Payback Reciprocal:

The IRR is calculated by a rigorous and time-consuming trial-and-error approach. The reciprocal of payback, which is a good approximation of the IRR, can be used to solve this problem. The concept can be applied to situations where a fixed cash flow is obtained over the asset's lifetime as well as situations where fluctuating cash flows are obtained.

Where cash inflows are constant (or the same) every year (called annuity):

The procedure to calculate IRR is as under:

- i) Determine the payback period of the proposed project.
- ii) Look for the factor closest to the payback period in the year row of the present value of annuity table. The relevant year for the purpose would be equivalent to the life period of the project.

For instance, if the life of the project is 6 years and its payback period is 4 years, then we have to look for the factor closest to 4.000 for the year 6 in Table. According to Table the factors closest to 4.0 for 6 years are 3.998 (13 % rate of interest) and 4.111 (12 % discount rate). The value closest to 4.0 is 3.998. Therefore, the actual value lies between 12 and 13 per cent, tilting on the side of 12 per cent. This value can be calculated by interpolation as shown in Illustration-6.6.

Where the stream of cash flows is of varying nature:

The calculation of IRR under such circumstances is a little more difficult. The way to simplify the process is to use a 'fake annuity' as a starting point.

The following procedures may be followed:

- i) Calculate the average annual cash flows to get a fake annuity.
- ii) Determine 'fake payback period' by dividing the initial outlay with the average annual cash flows after taxes (CFAT) as calculated in step (i).
- iii) Look for the factor in the annuity Table closest to the fake payback period in the same manner as in the case of annuity.
- iv) Adjust the IRR derived in step (iii) by comparing the average annual cash flow pattern from step-I to the actual variable stream of cash flows. Adjust the IRR a few percentage points upward if the real cash flow stream is higher in the early years of the project's existence than the average stream. Conversely, if in the early years the actual cash flow is below the average, adjust the IRR a few percentage points downward.
- v) Find out the present value of the uneven cash flows, taking the IRR as the discount rate as estimated in step (iv) by using present value Table.

- vi) If the PV of CFAT equals the original outlays by accident, you have arrived at the correct IRR. Otherwise, if you have not found the proper IRR rate yet, repeat step-(v). It is possible that the net present value will be positive or negative. If it is positive, try working for a different rate (i.e., a higher rate) to make it negative. If the NPV is negative, find a different rate (i.e., a lower rate) that will make it positive. When two consecutive discount rates are discovered, one of which causes the NPV to be positive and the other causing it to be negative, the true IRR can be calculated using the interpolation method, as shown in Illustration-6.6.

In brief, whether the cash inflows of a project are the same or change each year, you should choose two discounting rates such that the NPV result of the lower discounting rate is a positive amount and the NPV result of the higher discounting rate is a negative amount. The interpolation formula can then be used to calculate the accurate IRR. You do not need to worry about what is indicated point 2 above if your intuition is strong enough and you can estimate the two consecutive discounting rates with a little effort (viz., when the stream of cash flows is of varying nature).

IRR, like NPV, considers the time value of money as well as total cash inflows and outflows across the project's whole life cycle (asset). It is easier to understand for managers because the computation is always a percentage rather than an absolute number, as with the Net Present Value method. It also has the advantage of not requiring a discounted rate. A rate of return is provided by the technique itself. If projects are chosen with IRRs that are higher than the required rate of return, the strategy will achieve the goal of maximum of shareholder wealth.

However, as you may have noticed, IRR necessitates time-consuming calculations (based on trial-and-error or interpolation). Cash flows are supposed to be reinvested at the same rate as IRR in the IRR technique. This also means that if the IRR of two projects is, say, 16% and 20%, the cash flows generated by these two projects will be reinvested at their respective rates, i.e., 16% and 20%. It may appear unreasonable to reinvest cash flows at two different rates inside the same organisation. Several factors may influence whether project cash flows are reinvested in the company or used for other purposes. The cash earned may or may not be used internally in various circumstances.

Net Present Value Vs. Internal Rate of Return (IRR):

In many ways, the NPV and IRR approaches are similar. In some circumstances, they would make the same accept or reject decision, but in others, they would make a different conclusion. Let us see the similarities and differences between these two methods:

i) Similarities:

In certain cases, the two methodologies would produce consistent outcomes in terms of investment proposal acceptance or rejection. Both approaches will tell whether or not a project is sound. Both techniques

will suggest that the project should be rejected if it does not meet the criteria for acceptance.

Conventional and Independent Projects:

Both the NPV and IRR approaches will yield the same accept-reject conclusion in the case of conventional and independent projects. A traditional project has a cash flow pattern that starts with a capital investment and ends with a cash inflow. Capital outflows are limited to the initial period, i.e., at the start.

The term "independent initiatives" refers to investment ideas that do not preclude the adoption of another profitable project. If finances are available, all profitable applications will be approved. Accepting all profitable proposals has no further limits. Both the NPV and IRR techniques would imply that the same projects are profitable. If the NPV approach is utilised, all projects with a positive net present value (NPV) will be allowed; if the IRR technique is used, all projects with an IRR greater than the needed rate of return will be allowed. The last project that is allowed under NPV is one that has zero net present value; however, this project will have an IRR equal to the needed rate of return if utilizing the IRR approach.

The internal rate of return on the projects with positive net present values would be higher than the required rate of return. Only when the marginal or last project's internal rate of return equals the necessary rate of return will it have zero net present value. In terms of accepting or rejecting conventional and independent initiatives, the NPV and IRR techniques are comparable.

Decision Rule:

Accept a project	If, NPV is greater than zero ($NPV > 0$) If, IRR is greater than required rate of return ($IRR > k$)
May accept/	If, NPV is equal to zero ($NPV = 0$)
Reject a project	If, IRR is equal to required rate of return ($IRR = K$) .
Reject a project	If NPV is Negative or less than zero ($NPV < 0$) If, IRR is less than required rate of return ($IRR < K$)

Projects which have positive NPV will also have an IRR higher than the required rate of return. Projects which have negative NPV will also have an IRR lower than the required rate of return. Projects which have zero NPV will also have an IRR equal to the required rate of return.

ii) Differences:

The NPV and IRR approaches will yield the same outcome in the case of independent and conventional projects. In some cases, however, they will produce contradicting responses. For example, if the NPV approach considers one plan acceptable, IRR prefers another. This occurs when two projects are mutually exclusive.

Mutually Exclusive projects:

Projects that are mutually exclusive are ones in which the acceptance of one proposal results in the rejection of another. If there are multiple options for action, only one can be chosen; these options are mutually exclusive.

For example, a corporation may choose to set up its own sales organisation or hire an outside distributor to market its products. Out of the two options, the more profitable one will be chosen. When initiatives are mutually exclusive, ranking them becomes critical. Because the NPV and IRR standards can result in projects being ranked in a different order. When the ranking provided by the NPV and IRR approaches differs for mutually exclusive projects, it is preferable to employ the NPV technique, which is compatible with the goal of maximising shareholder wealth.

Non - Conventional Investments:

Non-conventional investments are those that do not guarantee a steady stream of cash inflows. In addition, funding may be necessary in order to utilize the project. During the project's lifespan, it may be necessary to invest more money. The purchase of an asset creates cash inflows for a number of years, is overhauled, and creates a stream of cash inflows for a number of years is a typical example of a non-conventional investment pattern. For Rs. 1,00,000, a machine can be acquired that generates cash inflows of Rs.25,000 per year for seven years. The machine will require a Rs.40,000 outlay (investment) in the eighth year to be overhauled, following which it would yield cash inflows of Rs.25,000 each year for the next seven years.

In this instance, the NPV and IRR approaches will rank the projects in a different order. Because IRR approaches produce multiple rates of return. The number of different rates of return is determined by the number of times the cash flow stream's sign changes. To address this issue, it is recommended that non-conventional investment projects be chosen using the NPV technique.

NPV and IRR choice of the Methods:

Both approaches, NPV and IRR, produce the same conclusions in the case of conventional and independent projects. However, the NPV and IRR techniques produce inconsistent conclusions in the case of mutually incompatible projects and projects involving non-traditional investments. Then, due to its advantage over IRR, the NPV approach should be used. Moreover, the NPV method is consistent with the objective of maximising the wealth of the shareholders.

iii) Profitability Index:

When using the Internal Rate of Return approach, a proposal may be rejected if the IRR is lower than that of the other, yet the former may not be a terrible proposal if the NPV is calculated using the target rate of discount.

Project	Cash outflow in year 0	Cash inflow per annum for 5 years (Rs.)	IPR%	NPV at 10% Rs.	NPV at 15% Rs.
A	50,000	15,000	15.4	6,865	280
B	68,000	20,000	14.4	7,820	960

If the organisation must pick between the two projects, and the IRR criterion is used, Project B will be rejected because it has a lower IRR. Project B, on the other hand, will be chosen if the - goal rate is set to 10% since it has a greater NPV. However, if a 15% target rate is applied, Project A will be chosen since it appears to be more appealing. You can calculate the figures and verify the results on your own.

The investment plan is good if the PV of aggregate future cash inflows is higher than the current cash outflow by way of investment, as stated earlier. If we had to select between two options, the one with a bigger excess of discounted cash inflows over cash outflows will be the superior option.

Illustration-6.8

Proposal	PV of total inflows (Rs.)	Outflows (Rs.)	Surplus (Rs.)
A	4,50,000	4,00,000	50,000
B	1,20,000	1,00,000	20,000

Proposal A appears to be more appealing because the net surplus over cash outflows is higher than in Proposal B. Please note that we are overlooking a very important factor: the rate of return on investment. The size of the inflow is meaningless unless it is compared to the entire amount of investment. Now, using a simple way of determining rate of return, we can see that the return on investment in the case of 'A' is:

$$\frac{50,000 \times 100}{4,00,000} = 12.5 \%$$

Whereas, in case of 'B' it is,

$$\frac{20,000 \times 100}{1,00,000} = 20 \%$$

Now it can be rationally stated that proposal 'B' is superior to 'A'.

The Profitability Index (PI) represents the connection between the present values of net cash inflows and outflows. It can be calculated in both unitary and percentage terms. The formula is as follows:

$$\text{Profitability Index} = \frac{\text{Present Value of Cash inflows}}{\text{Present Value of Cash outflows}}$$

If we apply this formula to the Illustration, we find that profitability index for each of the two proposals is:

A $4,50,000 \div 4,00,000 = 1.125$ or 112.5%

B $1,20,000 \div 1,00,000 = 1.20$ or 120%

You will find that the result is identical as per the rate of return on investment calculated earlier. Proposal B, therefore, is superior.

A question may now be posed. Why have two procedures if the result is the same under each of them? Please keep in mind that if Management has set a 'cut off rate' for accepting investment ideas, a proposal will not be authorized if the rate of return falls below the 'cut off rate' or the minimum projected rate of return. In the lack of a cut-off rate, the profitability index may appear to be meaningless. If two or more investment projects pass these criteria, however, due to resource restrictions, a decision may have to be taken amongst them. As a result, a plan with a high profitability index may be approved for approval. If there is no basic cut-off rate, the profitability index can be used once again be regarded as a good guide for choice making.

Net Present Value Vs. Profitability Index:

The NPV and PI as investment criteria, in most cases, provide the same accept or reject result. Both strategies are closely related to one another. The investment proposal will be accepted using the PI technique if the PI is bigger than one. The PI will be bigger than one if the investment proposal has a positive net present value. When the investment proposal has a negative NPV, PI will be less than one. These approaches may produce different rankings in the case of mutually exclusive investment offers. This is demonstrated in the following example.

Year	Project A Rs.	Project B Rs.
0 (outflows)	-5,000	-3,500
1 (inflows)	4,000	3,000
2 (inflows)	4,000	3,000
Present value of cash inflows @ 10%	6,944	5,208
(-) Less cash outflows	5,000	3,500
NPV	1,944	1,708

Profitability Index = $\frac{6,944}{5,000} = 1.39$

$\frac{5,208}{3,500} = 1.49$

As a result, project "A" is acceptable using the NPV technique, and project "B" is acceptable using the PI technique. Which project should the firm take on? As previously stated, the NPV method is preferable, hence project 'A' should be approved. The best project is one that adds the most value to the shareholders' wealth among the available options. As a result, the NPV technique provides a better mutually exclusive choice than the PI technique and ensures the selection of the best choices.

6.7 DEPRECIATION, TAX, AND INFLOWS

It is important to note that depreciation is not included in Discounted Cash Flow (DCF) calculations. A common mistake is to discount cash flows after depreciation has been deducted. This type of inaccuracy, in fact, demonstrates a lack of comprehension of the DCF's essential concept. The DCF approach is fundamentally based on inflows and outflows of cash and not on the accrual concept of revenues and expenses. Depreciation does not involve any cash flow. It is merely a book entry to allocate the cost of the asset over its useful life. It has of course the effect of reducing disposable income.

The initial cost of an asset is commonly seen as a lump sum outflow of cash at time zero in the DCF technique. In our examples, cash inflows are assumed to be after income taxes. As mentioned, depreciation is not considered when using discounted cash flow approaches. Nonetheless, because of its relationship with income tax, depreciation has some impact on annual cash flows. You are probably aware that depreciation is deductible as a regular company expense when calculating your taxable income.

Illustration-6.9

A piece of automatic equipment with an original cost of Rs. 12,000 is available for acquisition by the New Look Company. Calculate cash inflow after taxes using the following assumptions: annual cash savings of Rs. 5,600 before taxes, depreciation (straight line) of Rs.2,400 (based on the initial cost of Rs. 12,000), no salvage value, five-year life, and a tax rate of 50%.

	Tax Purpose Rs.	Cash inflow Rs.
Gross annual cash cost savings	5,600	5,600
Less: Depreciation	2,400	
Net incremental income subject to tax	3,200	
Income tax at 50% (payment in cash)	1,600	1,600
Net cash inflow after taxes		4,000

The income tax on Rs.5,600 would have been Rs.2,800 if depreciation had not been deducted, and the net incremental cash inflow would have been Rs. 2,800. As it stands, Rs. 1,200 of cash flow is kept; the tax rate (50%) applied to the depreciation deduction (Rs. 2,400) is thus considered a "tax shield."

6.8 LIMITATIONS OF APPRAISAL TECHNIQUES

The methods for valuing investments appear to be precise. However, it must be understood that an investment proposal's genuine worth can only be approximated. The final findings are based on estimated factors, which must be kept in mind at all times. The degree of impartiality and reliability of the input data would determine the outcomes' dependability to a considerable

extent. Constant inflation further confuses the picture. It's critical to factor in expected inflation when calculating cash flows.

The quantitative methodologies for investment appraisal essentially include three components: (i) capital investment, (ii) return or cash flows, and (iii) project or asset life. While capital investment can be calculated to a high degree of accuracy in some circumstances (e.g., the purchase price and installation cost of a piece of equipment), it cannot be done in all circumstances (e.g., development of a new product, opening a new sales territory), the amount can only be approximated.

The return factor, or cash inflows, is always subject to guesswork. And these estimations are based on the subjective probabilities (used in risk analysis) that are attributed to different outcomes. With so many unknowns in the future, forecasted cash flows may only be half-truths. The estimation of sales volume and price is the source of the majority of big errors. To calculate the amount of money saved from using labor-saving equipment, for example, an experienced engineer or production executive must evaluate the number of labour man hours saved, the rise or decrease in maintenance costs, the impacts on power consumption, and a variety of other factors.

Finally, estimating the usable or economic life of a project or asset is arguably the most difficult of all, as it is influenced by a variety of environmental, technological, and marketing factors. Only if the rate of technological change and obsolescence can be accurately assessed if an engineer's assumption about the usable life of a productive asset can be trusted. Customer acceptance and competitor reactions are both highly speculative events that determine whether a new product will be lucrative. Certain probability-based statistical techniques can help to reduce estimation mistakes when there is uncertainty, but they cannot completely eliminate uncertainty and thus inaccuracy.

The decision's soundness would thus be determined not only by the proper choice (or combination) of appraisal technique (or procedures), but also by the decision-makers' sound common sense and judgment.

6.9 SUMMARY

One of the most important ways for Management to attain the goal of wealth maximisation is through effective long-term capital deployment. Investment decisions influencing long-term capital projects or assets have a significant impact on the organization's future success. This unit focused on how to make more effective investment decisions that contribute to the firm's healthy growth. The management will be able to rank and choose among the proposals competing for essentially scarce long-term funds if proper analysis methods are used.

The Payback period, Accounting Rate of Return, and Discounted Cash Flow approaches, including; (i) Net Present Value, (ii) Internal Rate of Return, and (iii) Profitability Index, are the methodologies used for Capital Budgeting decisions. The Pay Back method is a quick way of determining how long it

will take to return the initial investment from the cash flow generated by the enterprise.

The Accounting Rate of Return method is simple to understand and calculate, but it has major drawbacks. It averages cash flows rather than distinguishing between projects with long and short lifespan, as well as those with irregular cash flows. This model is appropriate when a project's return clearly surpasses the needed rate or when the project is not in direct competition for money with other projects.

The Net Present Value and the Internal Rate of Return methods are the two most common discounted cash-flow approaches. When calculating the present value of cash inflows, the former uses a desired (or needed) rate of return as a discount factor. The investment should have a present value excess over the initial cost or investment at the targeted rate. The latter is the rate of return, which compares the cost of future cash flows to the cost of the initial investment that generates them. Both of these DCF strategies produce equal results in many situations. The Profitability Index is the third in this category, and it shows the percentage relationship between the present value of cash inflows discounted at the desired rate and the present value of the cash outflows discounted at the desired rate and the cost of the investment. This method offers ready comparability between projects of unlike size and duration.

Discounted cash flow approaches, in general, provide the most accurate evaluations of various investment plans. These methods are relatively straightforward to utilize because of the usage of present value tables. All capital budgeting appraisals are subject to certain constraints. However, the three fundamental components of quantitative analytical procedures - investment, return, and time - are all estimations to differing degrees. The key factor in investment appraisal is the assessment of future benefits. Certain methodologies have been developed, such as sensitivity analysis, to help reduce the margin of error of such estimates.

6.10 SELF ASSESSMENT QUESTIONS/ EXERCISES

1. Examine different types of capital projects and explain why they are often approached differently?
2. What is payback period? Why does this method enjoy a good deal of popularity? What are its limitations?
3. What is Internal Rate of Return? Are the Internal Rate and Payback related? Explain?
4. What are the essential limiting factors in the reliability of capital budgeting measurement techniques including discounted cash flow?
5. Discuss about 'cost of capital' as a device for establishing a cut-off point for capital investment proposals.

6. The Western India Company is considering the replacement of one of its machines with a newer model, which supposedly will reduce operating costs considerably. The company has prepared the following analysis of costs:

	Old Machine Rs.	New Machine Rs.
Depreciation	10,000	18,000
Labour	12,000	6,000
Other Costs	10,000	4,000
Total Annual Costs	32,000	28,000

The old machine originally cost was Rs. 80,000 and has been operated for three years out of an estimated eight-year life. The new machine, which has an estimated life of five years, can be acquired for Rs. 90,000 less a trade-in allowance of Rs. 20,000 for the old machine. The other costs listed above consist of repairs, power to operate the machine, lubrication, and similar costs.

Which of the following statements is false?

- Depreciation on the old machine is a sunk cost.
 - Depreciation on the old machine may be disregarded in deciding whether to replace the old machine.
 - Labour and other costs are out-of-pocket costs.
 - The payback period of the new machine is seven and one-half years.
7. The Greatways Company is considering replacing an old machine with a newer model having lower maintenance costs. The old machine has a current book value of Rs. 9,000 and a (straight line) depreciation charge of Rs. 3,000 per year for the remaining life of 3 years including the current year. It will have no salvage value. However, at present the machine can be sold in the market for Rs. 6,000. The existing machine requires annual maintenance costs of Rs. 3,000. The new machine will cost Rs. 12,000 and require an annual maintenance costs of Rs.600. Its expected useful life is 3 years with no salvage value.

Assuming straight-line depreciation also for new machine and a tax rate of 50%, determine the incremental cash flows (both outflows and inflows) of the replacement decision.

8. Farewell Company has an investment opportunity costing Rs.30,000 with the following expected net cash flow (i.e., after taxes and before depreciation);

<u>Year</u>	<u>Net Cash flow (Rs.)</u>
1	4,000
2	4,000
3	4,000

4	4,000
5	4,000
6	7,000
7	9,000
8	12,000
9	9,000
10	2,000

Using 10% as the cost of capital (rate of discount), determine the following:

- a) Payback period
- b) Net present value at 10 % discounting factor
- c) Profitability index at 10% discounting factor.
- d) Internal rate of return with the help of 10 % discounting factor and 15 % discounting factor.

9. The Deccan Corporation, which has a 50% tax rate and a 20% after-tax cost of capital, is evaluating a project which will cost Rs. 1,25,000 and will require an increase in the level of inventories and receivables of Rs. 25,000 over its life. The project will generate additional sale of Rs. 1,00,000 and will require cash expenses of Rs. 25,000 in each of its 5-year life. It will be depreciated on a straight-line basis. What are the net present value and internal rate of return for the project?

10. The management of Maratha Udyog has two alternative projects under consideration. Project 'A' requires a capital outlay of Rs. 3,00,000 but project 'B' needs Rs. 4,20,000. Both are estimated to provide a cash flow for six years: A Rs. 80,000 per year and B Rs. 1,10,000 per year. The cost of capital is 12%. Show which of the two projects is preferable from the viewpoint of (i) Net Present Value and (ii) Internal Rate of Return.

11. Speedex Dry Cleaning Company is considering the purchase of new wash and dry equipment in order to expand its operations. Two types of options are available: a Low-Speed System (LSS) with a Rs. 40,000 initial cost and a High-Speed System (HSS) with Rs. 60,000 initial costs. Each system has a sixteen-year life and no salvage value. The net cash flows after taxes (CFAT) associated with each investment proposals are:

CEAT for year-1	Low Speed System (LSS	High Speed System (HSS)
through 16	Rs. 8,000)	Rs. 12,000

Which speed system should be chosen by Speedex, assuming 15 % cost of capital/rate of discount?

12. Space Age Printers, a large and profitable printing press, is faced with the prospect of replacing a large printing system. Two systems currently being marketed will do the job satisfactorily. The Superior system costs Rs. 1,50,000 and will require cash running expenses of Rs. 60,000 per year. The Matchless system costs Rs. 2,25,000 but running expenses are expected to be only Rs. 45,000 per year. Both machines have a ten-year

useful life with no salvage value and would be depreciated on a straight-line method.

- a) If the company pays a 40 % tax and has a 11 % after-tax required rate of return, which machine should it purchase?
 - b) Would your answer be different if the required rate of return is 9% ?
13. Vishwa Bharti Company is examining two mutually exclusive proposals for new capital investment. The data on the proposals are as follows:

<u>Proposal A</u>	<u>Proposal B</u>	
Net cash outlay	Rs. 50,000	Rs. 60,000
Salvage value	2,000	NIL
Estimated life	5 years	6 years
Depreciation	Straight-line Method	Straight-line Method
Corporate income-tax	50%	50%
Cut-off rate used for appraisal	10%	10%
<i>Earnings before Depreciation and taxes</i>		
I year	Rs. 13,000	Rs. 12,000
II year	15,000	16,000
III year	18,000	18,000
IV year	22,000	24,000
V year	12,000	24,000
VI year	-	20,000

Using both (a) present value method and (b) D C F rate of return (internal rate of return) calculations, you are asked to advise which proposal would be financially preferable, (you may calculate depreciation on the original cost without taking salvage value into account. You may also ignore income tax on salvage value received).

14. Arunachal Limited has been having a job performed by a neighbouring company on a part used in its project at a cost of Rs.5 per part. The annual average, production of this part is expected to be 6,000 pieces.

The Arunachal Limited itself can perform this operation by bringing into operation two machines: spare lathe which has a net book value of Rs. 2,000 and a new machine which can be purchased at a price of Rs. 70,000.

The new machine is expected to last 7 years. The old machine has a remaining physical life of at least 10 years and could be sold now for approximately Rs. 15,000. The final salvage value of both machines is considered negligible.

In performing the operation, on its own, the Arunachal Limited will incur out-of-pocket costs for direct labour, power supply, etc. of Rs. 2 per part.

Prepare an analysis (including explanatory comments) which would help to determine whether it is profitable for the company to perform these operations itself. The company normally expects to earn a rate of return before taxes of about 15 % on its invested capital. Ignore income tax effect.

Answers to Questions/Exercises (6 through 12)

6. (d) The payback period is approximately five and five-sixth year. The required outlay is Rs. 70,000 (90,000-20,000). The annual savings in out-of-pocket costs are 22,000 (12,000 + 10,000) less Rs. 10,000 (6,000 + 4,000), or 12,000. The payback period is then Rs. 70,000 ÷ 12,000.

7. Cash inflow due to sale of machine Rs 7,500

Net cash outflow Rs 4,500

Total cash inflow each year with new machine Rs 1,700

8. a) Payback period = Six years and four months
 b) Net present value = Rs. 3,917
 c) Profitability Index = Rs. 1.131 (or 113.1%)
 d) Internal rate of Return = 12.75 (approx.)

9. NPV = Rs. 9,600

IRR = 22.78 (try interpolation between 20% and 24%)

10.	<u>NPV</u>	<u>IRR</u>
Project A	28,880	15.34
Project B	32,210	14.68

Project B is preferable as its NPV is more than that of A. Project A is preferable on the basis of IRR.

11.	<u>LSS</u>	<u>HSS</u>
NPV	7,632	11,448

The High-Speed System should be chosen by the company as its NPV is greater than that of the Low Speed System. However, the profitability index of both the systems is the same, that is 119.08. per cent. On the basis of this criterion, the company could be indifferent between the two systems. The decision then would depend on other factors.

12. a) NPV = Rs. 4,332 (negative)

Since the NPV is negative, Matchless system should not be acquired. The company should buy the Superior system.

- b) NPV = Rs. 2,016

Since the NPV is positive at 9% rate of discount the company should purchase the Matchless system. Therefore, the answer is definitely different.

13.	<u>Proposal A</u>	<u>Proposal B</u>
a) NPV	(Rs.) -948	1,879
b) Average cash flow	(Rs) 13,600	14,500
Fake payback period	3.846	4.138
IRR	9.274	11.024

Since the NPV and IRR of proposal B are higher than those of proposal A, proposal B would be financially preferable.

14. The present value of annual savings= Rs. 74,880

Investment required to produce the part (Rs. 70,000 + 15,000) = Rs. 85,000. As the present value of savings is less than the present value of investment required, the part should continue to be purchased.

6.11 FURTHER READINGS

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UNIT 7 MANAGEMENT OF WORKING CAPITAL

Objectives

The objectives of this unit are to:

- Familiarise with the concepts and components of working capital.
- Explain the significance and need for working capital.
- Discuss the determinants of the size of working capital.
- Describe the criteria for efficiency in managing working capital.

Structure

- 7.1 Introduction
- 7.2 Significance of Working Capital
- 7.3 Operating Cycle
- 7.4 Concepts of Working Capital
- 7.5 Kinds of Working Capital
- 7.6 Components of Working Capital
- 7.7 Importance of Working Capital Management
- 7.8 Determinants of Workings Capital Needs
- 7.9 Approaches to Managing Working Capital
- 7.10 Measuring Working Capital
- 7.11 Working Capital Management under Inflation
- 7.12 Efficiency Criteria
- 7.13 Determining Optimal Cash Balance
- 7.14 Management of Cash Flows
- 7.15 Summary
- 7.16 Key Words
- 7.17 Self Assessment Questions
- 7.18 Further Readings

7.1 INTRODUCTION

Effective financial management includes, among other things, the proper management of cash invested in a business. These funds can be used for a variety of purposes, including the purchase of fixed assets, business diversification and expansion, plant and machinery renovation or modernization, and research and development. Further, finances are also required for short-term purposes, i.e., for running the day to day business activities. For example, if you are a manufacturer, you will need to plan for the purchase of raw materials, the payment of workers' wages, and meeting day-to-day expenses. It is possible that not all the things produced during each time will be sold immediately. As a result, some commodities, such as

raw materials, semi-finished (manufacturing-in-process) goods, and finished goods, remain in stock. As a result, the monies are held in various types of inventory. Again, not all the finished goods stock may be sold for cash; part of it may be sold on credit. Credit sales also entail holding monies with debtors until payment is obtained or the bills are collected.

Working capital is defined as a company's investment in short-term assets such as cash, short-term securities, accounts receivable (debtors), and raw materials, work-in-progress, and finished goods inventories. It can also refer to the portion of a company's total capital that is used for short-term activities. Working capital, in simple terms, is the investment required to continue the business's day-to-day operations without interruption. Therefore, working capital management is just as vital as long-term financial investment management.

7.2 SIGNIFICANCE OF WORKING CAPITAL

You will be hard pressed to find a business that does not require some form of operating capital. Even a properly equipped manufacturing company will fail if it lacks (a) enough raw material to process, (b) enough cash to pay bills, (c) the ability to wait for a market for its finished goods, and (d) the ability to extend credit to its clients. Similarly, a business would be worthless if it did not have items with which to sell its goods. As a result, the working capital of a company is its lifeblood. In fact, without appropriate working capital, any organisation, profit-oriented or otherwise, will be unable to carry out day-to-day company activities.

7.3 OPERATING CYCLE

The operating cycle/working capital cycle is the period of time between the procurement of raw materials or product and their conversion into cash. Figure-7.1 depicts the sequence of events that generally occur throughout an operating cycle. The monies invested in activities are re-cycled back into cash, as per the operating cycle. The longer the conversion period is, the longer the operating cycle is. Obviously, the shorter the operating cycle, the lesser the amount of money that is invested for various intermediate activities.

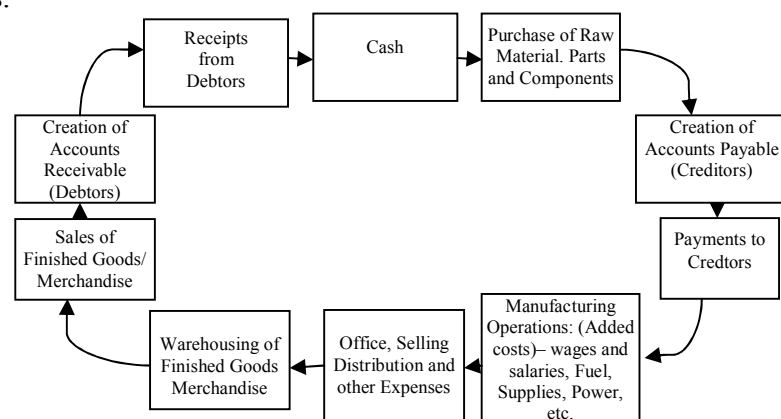


Figure-7.1: Operating Cycle

Current assets are investment types which can be made using short-term sources such as bills payable, creditors, trade credit, bank overdrafts, ongoing expenses, and so on, all of which are referred to as current liabilities. The available funds may be greater than the requirements for investing in various types of assets at times, e.g., inventory, receivables, and essential cash balance.

7.4 CONCEPTS OF WORKING CAPITAL

There are two concepts of working capital, viz., Gross concept and Net concept.

(a) Gross Working Capital:

Working capital, according to the gross definition, is the firm's investment in current assets. Working capital and the total of current assets are viewed as interchangeable terms in this idea. This notion is also known as circulating capital or current capital. The proponents of the gross working capital concept advocate for the following reasons:

- i) Profits are generated from assets that are partially fixed and partially current. Fixed and current assets have certain similarities, as both of them are partly financed with borrowed funds, and are intended to provide earnings over and above the interest costs. The logic thus dictates that the total of current assets be interpreted as working capital.
- ii) The total current assets are more important to the management than the sources of funds since they represent the entire money available for operating purposes. An increase in overall investment in the business also results in an increase in working capital.

b) Net Working Capital:

The difference between current assets and current liabilities is referred to as net working capital. Current liabilities are external claims that are projected to mature for payment during an accounting year, such as creditors, bills payable, trade credit, bank overdraft, and outstanding expenses, as discussed before. It is possible for net working capital to be positive or negative. A negative net working capital arises when current obligations exceed current assets, while a positive net working capital arises when the opposite is true.

Current assets should be sufficient to cover current liabilities, forming a margin or buffer for commitments due during a business's normal operating cycle period. A company's solvency is jeopardized by a lack of liquidity, which makes it risky. Excessive liquidity, on the other hand, is not beneficial for business, and may be related to mismanagement of current assets. As a result, management should take immediate and timely action to correct the firm's liquidity position.

The concept of net working capital also encompasses the issue of a well-balanced mix of long- and short-term finances for financing current assets. Every business has to have a fixed portion of net working capital. As a result,

permanent sources of money such as owners' stock, preference capital, debentures, long-term debt, and retained earnings should also be used to pay a portion of working capital. Managements can determine whether current assets should be supported with equity or debt capital.

The experts in finance uphold the net working capital concept in support of their stand and they state that:

- In the long run what matters is the surplus of current assets over current liabilities.
- This concept helps the creditors and investors to judge the financial soundness of the enterprise.
- It is the excess of current assets over current liabilities, which can be relied upon to meet contingencies since this amount is not liable to be returned.
- It ascertains the correct comparative financial position of companies having the same amount of current assets.

The gross and net conceptions of working capital can be considered two fundamental aspects of working capital management. Both notions are operationally important to management, thus neither should be overlooked. The gross idea of working capital stresses the quantitative aspect while the net notion emphasizes the qualitative.

7.5 KINDS OF WORKING CAPITAL

The working capital is classified ordinarily into two categories as follows:

- a) Fixed, Regular or Permanent Working Capital; and
 - b) Variable, Fluctuating, Seasonal, Temporary or Special Working Capital
- a) Fixed Working Capital:**

The operating cycle, which is a continuous process for creating items, is linked to the need for existing assets. However, the amount of money invested in current assets may not always be the same. Depending on the quantity of production, the demand for current asset investment may increase or decrease over time. Regardless of the number of operations, a certain minimum level of current assets is always required for the company to operate. Since this level of current asset investment is permanently tied up in the business, it is referred to as permanent, fixed, or regular working capital. It is permanent in the same way as investment in the firm's fixed assets.

b) Fluctuating Working Capital:

The need for working capital over and above the permanent working capital will vary depending on changes in production and sales. Seasonal fluctuations, as well as unusual or expected circumstances, might affect the requirement for working capital. Additional operating capital may be required to deal with fierce market rivalry or other unforeseen events such as

strikes and lockouts. Additional operating capital may be required to fund any special advertising campaigns aimed at raising sales or other promotional activities. This additional working capital is called fluctuating (variable, seasonal, temporary, or special) working capital because it is required to support changing business activities.

Fixed working capital remains stable throughout time, as seen in figure-7.2, whereas variable working capital fluctuates, sometimes increasing and sometimes reducing. However, the permanent working capital line is not necessarily horizontal. As demonstrated in figure-7.3, the permanent working capital of a growing company may continue to rise over time. Permanent and temporary working capital are both necessary to support production and sales throughout the operational cycle, but temporary working capital is arranged by the company to address liquidity requirements that are only intended to last a short time. Figures-7.2 and 7.3 give an idea about the fixed and fluctuating working capital.

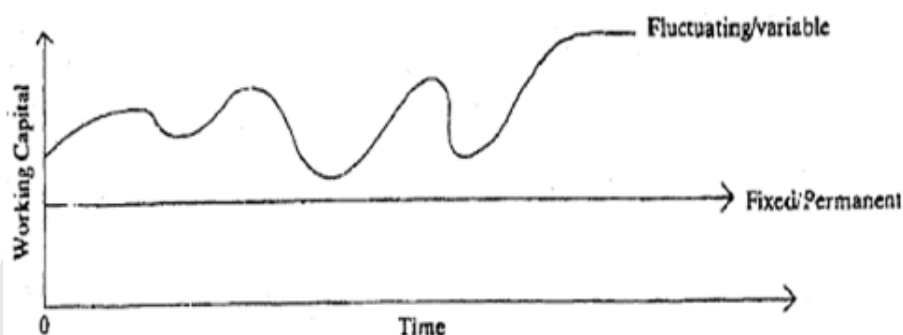


Figure-7.2: Fixed working capital remains constant overtime

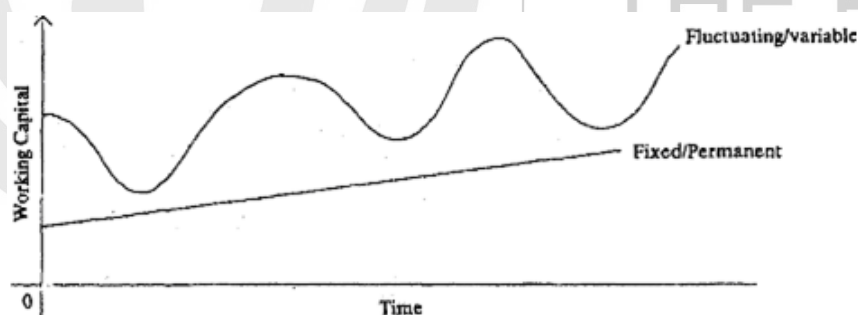


Figure-7.3 Fixed working capital increases over time

7.6 COMPONENTS OF WORKING CAPITAL

You have already noted that working capital has two components: Current assets and Current liabilities. The current assets comprise of several items and the typical ones are:

- i) Cash to meet the expenses as and when they occur.
- ii) Accounts receivables or sundry trade debtors arise due to credit sales.
- iii) Inventory of:
 - a) Raw materials, stores, supplies and spares,

b) Work-in-process, and

c) Finished goods.

- iv) *Advance payments* towards expenses or purchases, and other short-term advances which are recoverable.
- v) *Temporary investment* of surplus funds, which could be converted into cash whenever needed.

A portion of the funds needed to finance current assets could come from credit purchases and deferred payments due to custom, usage, or payment arrangements. The remainder of the working capital requirement may be supplied through short-term borrowings from financiers such as banks. Current obligations refer to all of these items. The typical items of current liabilities are:

- i) Goods purchased on credit.
- ii) Expenses incurred in the course of the business (e.g., wages, rent, electricity bills, interest, etc.) which are not yet paid.
- iii) Temporary or short-term borrowings from banks, financial institutions, or other financiers.
- iv) Advances received from the parties against goods to be sold or delivered, or as short-term deposits.
- v) Other current liabilities, such as tax and dividends payable.

Current Assets:

Now, some of the major components of **current assets** are explained here in brief:

a) Cash:

We all know that money is the most important factor in starting a business. As a result, capital is necessary to purchase fixed assets such as equipment and machinery, which enable a company to make items and generate revenue by selling them. Further, cash is necessary and invested in working capital. Enterprises need to spend on working capital as they must hold a certain quantity of raw materials and finished goods, as well as provide credit terms to their consumers.

Capital invested at the beginning of the operational cycle is freed at the end to finance new investments. However, the company will need more cash if it wants to purchase more fixed assets, expand its operations, or make a change in its working capital cycle, such as extending credit terms to consumers. The demand for cash is influenced by a number of factors, some of which are under the control of financial managers and others which are not. It is impossible to run a business without cash. Keeping the cash without a purpose costs the company, either directly in the form of interest or indirectly in the form of income that could have been earned with the cash.

Cash management, in the context of working capital management, refers to

maximising the benefit and minimising the expense of storing cash. The ideal way to achieve the cash management goal is to shorten the working capital cycle, particularly the cash or bill collecting process, and invest the surplus cash in the most profitable short-term assets.

b) Accounts Receivable:

Firms prefer to sell for cash rather than on credit, but in today's competitive market, they are compelled to do so. Credit is now so widespread in the purchase of goods and services that it is taken for granted. 'Accounts receivables' arise as a result of the sale of products or the provision of services on credit. Business units demand credit from their suppliers to match their investment in credit supplied to consumers as consumers demand credit. Trade credit is the extension of credit from one business to another for the purchase of products and services.

Though commercial banks meet a considerable portion of working capital needs, trade credit remains a substantial source of financing for businesses, and the accounts receivable generated by trade credit represent important investments. Carrying receivables includes both direct and indirect costs, but it has a significant value in terms of growing sales. Excessive amounts of accounts receivable cause a drop in cash flows and may result in bad debts, lowering the firm's profit margin. Therefore, it is critical to keep track of and manage receivables on a regular basis.

c) Inventory:

Inventory makes up a large portion of a manufacturing company's working capital or current assets. Inventory control (physical/quantity control and value control) is critical since inventories are important components of the costing process and can account for more than 60% of current assets. Inventory holding is beneficial since it satisfies a variety of aims and purposes, but too much inventory is undesirable because it costs businesses a lot of money.

Inventory, which includes raw materials and other consumables, as well as work-in-progress and finished commodities, is a significant part of current assets. The extent of inventory holding is determined by a number of factors, including the nature of the industry, material availability, technology, business practices, price fluctuation, and so on. Holding inventory supports a smooth manufacturing process, price stability, and prompt client delivery. Inventory, like every other sort of asset, has a cost associated with it. This cost comprises the potential cost of monies held in inventory, storage costs, and stock-out fees, among other things. To justify a certain quantity of inventory, the advantages of maintaining inventory must outweigh the costs.

d) Marketable Securities:

Although cash and marketable securities are not the same, they can be converted to cash at a moment's notice. Holding funds for longer than necessary indicates the company is losing out on potential revenue.

Normally, extra cash is placed in marketable securities, which serves two purposes, viz., provide liquidity and earn a return.

Activity-7.1

- a) List some main items of working capital in an organisation, e.g., inventory of raw material supplies, stores, etc.
-
-
-
-
-
- b) List some of the major items of operating expenses such as; wages and salaries of staff.
-
-
-
-

7.7 IMPORTANCE OF WORKING CAPITAL MANAGEMENT

Working capital and its management are of great importance to both internal and external analysts because of their direct association with a company's day-to-day operations. Working capital deficiency or mismanagement is becoming widely recognised as the major cause of most business failures. We must not forget that working capital management is an important aspect of total financial management and, eventually, total business management. As a result, working capital management is both a task and an opportunity for a financial manager who wishes to play a key role in his company.

Working capital management failure can lead to technical insolvency and possibly the dissolution of a company. Managers must acquire a long-term view for managing working capital as receivables and inventory tend to expand, as well as increased demand for bank credit as a result of the Central Bank's rigorous control of credit in India. Inefficient working capital management can result in either insufficient or excessive working capital which is not in the interest of the company.

The inadequate working capital may result in the following negative repercussions for a company. Due to a lack of cash, it may be difficult for the company to execute profitable ventures. Operating strategies may become difficult to implement, resulting in the firm's profit goals not being met.

- i) Operating inefficiencies may creep in due to difficulties in meeting even day to day commitments.

- ii) Fixed assets may not be efficiently utilized due to lack of working funds, thus lowering the rate of return on investments in the process.
- iii) Attractive credit opportunities may have to be lost due to paucity of working capital.
- iv) The firm loses its reputation when it is not able to honor its short-term obligations. As a result, the firm is likely to face tight credit terms.

On the other hand, the excessive working capital may pose the following dangers:

- i) Excess of working capital may result in unnecessary accumulation of inventories, increasing chances of inventory mishandling, waste, and theft.
- ii) It may provide an undue incentive for adopting too liberal a credit policy and slackening of collection of receivables, causing a higher incidence of bad debts. This has an adverse effect on profits.
- iii) Excessive working capital may make management complacent, leading eventually to managerial inefficiency.
- iv) It may encourage the tendency to accumulate inventories for making speculative profits, causing a liberal dividend policy, which becomes difficult to maintain when the firm is unable to make speculative profits.

An enlightened management, therefore, should maintain the right amount of working capital on a continuous basis. The financial and statistical techniques can be helpful in predicting the quantum of working capital needed at different points of time.

7.8 DETERMINANTS OF WORKING CAPITAL

There is no formulae or criteria for calculating a company's working capital requirements. While determining the level of working capital, the Management must consider a number of factors. The amount of working capital required by a company is influenced not only by the company's internal characteristics, but also by the economic, monetary, and general business environment. Among the various factors, the following are the important ones:

a) Nature of Business:

The nature of a company's business has a significant impact on its working capital requirements. Trading and financial enterprises often have a modest fixed asset investment but a high working capital requirement. To meet the different demands of its customers, retail businesses, for example, must keep enormous quantities of a range of items. Some manufacturing enterprises, such as tobacco and construction, must invest a significant amount in working capital but just a small amount in fixed assets. Public utilities, on the other hand, have a limited demand for operating capital and must spend heavily in fixed

assets. Because they primarily sell cash and provide services rather than things, their working capital requirements are minimal. As a result, the amount of money invested in debtors or stocks is either null or negligible. Most manufacturing companies' working capital requirements are in the middle of the two extremes of trading corporations and public utilities.

b) Size of Business:

The size of a company has an impact on its working capital requirements. The scale of processes can be used to gauge size. A company with a bigger scale of operations will require more working capital than a company with a smaller scale of operations. The risks and contingencies that come with a particular type of business also play a role in determining the amount of working capital required to maintain liquid resources.

c) Manufacturing Cycle:

The purchasing of raw materials begins the manufacturing cycle, which ends with the fabrication of finished goods. Working capital will be required more if the manufacturing cycle is longer, because a longer manufacturing time span indicates a higher tie-up of funds in inventory. Any delay in the production process will result in an increase in the amount of work-in-process and the need for working capital. You may have noticed that companies that manufacture heavy machinery or other products with long manufacturing cycles try to reduce their inventory investment (and thus their working capital) by requesting advance or recurring payments from consumers.

d) Business Fluctuations:

Seasonal and cyclical fluctuations in product demand have a significant impact on the firm's working capital requirements, particularly its temporary working capital requirements. Increased sales arise from an upswing in the economy, which leads to an increase in the firm's inventory and receivables, or book debts. A drop in the economy, on the other hand, may result in a drop in sales and, as a result, a drop in stock and book debt levels. The seasonal fluctuations may also cause production issues, as an increase in production output during peak seasons may be costly. To fully utilize its resources, a company may maintain a policy of consistent production throughout the year. This will imply stockpiling inventory during the off-season and quickly disposing of them during the peak season. As a result, financial plans for seasonal working capital needs should be developed ahead of time. The financial plan should be adaptable enough to account for seasonal changes.

e) Production Policy:

Even if demand is seasonal, if a company pursues a consistent production program, inventory will accumulate during off-season months, resulting in higher inventory costs and hazards. If the costs and

dangers of maintaining a consistent production schedule are too high, the company may opt for a policy of altering production schedules in response to demand variations. Firms with physical facilities that can be used to manufacture a number of products can benefit from a number of activities. As a result, such businesses produce their primary items during the season and secondary products during the off-season. Accordingly, depending on the conditions, production policies may range from one firm to the other and the need for working capital will also vary.

f) Turnover of Circulating Capital:

Working capital requirements are influenced by the pace with which the operating cycle completes its circle (i.e., cash, raw materials, finished product, accounts receivables, cash).

g) Credit Terms:

The level of working capital is influenced by the firm's credit policy, which influences the size of book debts. Though credit terms are offered to consumers to a large extent, they are constrained by the norms and practices of the industry or trade to which the firm belongs. Nonetheless, it may attempt to develop its credit policy within these limits. In most cases, a lengthier collection period means locking up more money in book debts. The sloppy collection process may actually raise the risk of bad debts. As a result, a company's working capital requirements are influenced by the credit terms offered by its creditors. A company with favourable credit terms will require less working capital.

h) Growth and Expansion Activities:

Although it is difficult to specify any solid rules on the relationship between increase in the volume of a firm's business and its working capital needs as the company expands, a logically higher quantity of working capital will be required as the company grows. It is important to remember that the need for more working capital funds may come before, the expansion of business activities. Changes in economic conditions and corporate policies can cause a shift in the composition of a company's working capital. Growing industries necessitate more working capital than stagnant businesses.

i) Operating Efficiency:

A company's operating efficiency refers to how well its resources are used. By effectively reducing its operating costs, the company can reduce its requirement for working capital. The usage of working capital is enhanced, and the cash cycle is expedited, as a result of higher operating efficiency. Thus, the better utilization of resources improves profitability and helps in relieving the pressure on working capital.

j) Price Level Changes:

In general, rising price levels necessitate increased working capital investment. With rising prices, current assets require increased investment at the same level. Firms that can promptly modify their

product pricing upwards, may not have a major working capital difficulty during periods of rising levels. Due to differences in individual prices, the impacts of changing the price level may be perceived differently by different enterprises. Some businesses may be unaffected by increased pricing, while others may be severely impacted.

k) Other Factors:

There are a few more variables that influence the size of working capital. A company's strong net profit margin contributes to its working capital pool. The net profit obtained in cash represents a source of working capital. Adjusting non-cash elements such as depreciation, outstanding expenses, and losses written off, the cash inflow can be estimated from the net profit.

Working capital is influenced by the firm's appropriation policy, or the decision to keep or disperse profits. Dividend payments deplete financial resources, reducing the firm's working capital to that level. The firm's working capital situation will be strengthened if profits are retained in the business. In general, working capital requirements are influenced by modes of transportation and communication. If they are not sufficiently established, industries will be forced to retain massive stocks of raw materials, spare parts, finished goods, and other items at both production and delivery locations.

7.9 APPROACHES TO MANAGING WORKING CAPITAL

In general, there are two ways to working capital management in a business: (i) the traditional approach, and (ii) the operational cycle method.

a) Conventional Approach:

This strategy entails properly and economically managing the various components of working capital (i.e., inventory, receivables, payables, and so on) so that neither idle funds nor a scarcity of funds exist. In India, a greater emphasis is placed on debtor management because debtors account for majority of working capital investment. Inventory control, has not yet been widely implemented, maybe due to the scarcity of commodities and ever-increasing prices.

b) Operating Cycle Approach:

Working capital, as defined by the volume of operational expenditure, is a result of this strategy. Working capital is determined using this method by the length of the operating cycle and the operating expenditure required to complete it. The number of days engaged in each stage of the operating cycle, from the acquisition of raw materials through the realization of proceeds from debtors, is measured in days. The required operating expenses for an operational cycle, computed based on operating expenses required for a year, will be the optimum amount of working capital.

Most organisations in India used to utilize the traditional strategy, but this is changing as the operational cycle approach becomes more popular. This strategy is commonly used by banks when extending credit to their customers.

7.10 MEASURING WORKING CAPITAL

The factors outlined in the earlier section have an impact on the size of a company's working capital. How to identify or estimate the amount of working capital that an enterprise would require is a difficult question. Let us go through the following example to understand how the quantum of working capital required is calculated.

Illustration-7.1

Determine the size of working capital for M/s Sriram Tricycles Ltd., a newly established business, using the following information:

- a) The cost sheet shows that the various elements of cost bear the under mentioned relationship to the selling price:
 - Materials, parts, and components 40%
 - Labour 30%
 - Overhead 10%
- b) Production in 2022 is estimated to be 60,000 tricycles.
- c) Raw material, parts and components are expected to remain in the stores for an average period of one month before issue to production.
- d) Finished goods are likely to stay in the warehouse for two months on an average before being sold and delivered to customers.
- e) Each unit of production will be in-process for half a month on an average.
- f) Half of the sales are likely to be on credit. The debtors will be allowed two months credit from the date of sale.
- g) Credit period allowed by suppliers of raw material, parts and components is one month.
- h) The lag of payment to labour is one month and 50% of the overhead consists of salaries of non-production staff.
- i) Selling price is Rs. 2000 per tricycle.
- j) Assume that sales and production follow a consistent pattern.
- k) Allow 20% to your computed figure for buffer cash and contingencies.

It will be helpful to sort out the following essential data before attempting to determine working capital:

- a) The yearly production is 60,000 tricycles. Hence, monthly production will be 5,000 tricycles.

- b) The tricycles are sold for Rs. 2,000 each. The various cost aspects (i.e., raw material, parts and components, labour, and overheads) account for 80 percent of the selling price (40 percent +30 percent +10 percent). As a result, the production cost is:

$$[2,000 \times \frac{80}{100}] = \text{Rs. } 1,600/-$$

M/s Sriram Tricycles Ltd., Statement of working capital requirements

(Rs.in lakhs)			
Current Assets:			
(i)	Costs of raw material, parts, and components (1 Month) 5,000 x Rs.800 x 1	40	
(ii)	Cost of finished goods (2 Months) Rs.5,000 x Rs.1600 x 2	160	
(iii)	Work- in-Process (1/2 Month) 5,000 x Rs.1,600 x ½	40	
(iv)	Debtors (50% of sales) 2 months credit) 5,000 x ½ x Rs.1600 x 2	80	320
Less: current liabilities:			
(v)	Creditors (one month) 5000 × Rs.800 × 1	40	
(vi)	Wages and Salaries:		
	(a) Wages: 5000 × Rs.600 × 1	30	
	(b) Salaries (Overheads): 5000 × Rs.200 × ½ × 1	05	75
			245
Add 20% for buffer cash and contingencies		49	49
Average working capital required per month			294

The above figures have been worked out as follows:

(i) Cost of raw material, etc.:	
Monthly production	5000 units
Cost of material, etc. per unit	Rs. 800
Period for which stock Required.	1 month
Hence, amount locked up 5,000 × 800 × 1	Rs. 40,00,000
(ii) Cost of finished goods:	
Monthly Production	5000 units
Cost of production per unit	Rs. 1,600
Period for which stock required.	(800+600+200)
Hence, amount locked up 5,000 × 1,600 × 2	2 months
	Rs. 160,00,000

(iii) Work-in-Process Stock:	
Monthly Production	5,000 units
Cost of production per unit	Rs. 1,600
Period for which stock required.	1/2 Month
Hence amount locked up $5,000 \times 1,600 \times 1/2$	Rs. 40,00,000
(iv) Debtors:	
Sales per month	5000 Units
Proportion of credit sales	50 per cent
Cost of Production per unit	Rs. 1,600
Period of credit	2 months
Hence amount locked up $5,000 \times \frac{1}{2} \times 1,600 \times 2$	Rs. 80,00,000

(vi) Creditors:	
Monthly production	5,000 Units
Cost of production per unit	Rs. 1,600
Cost of raw material etc. being one half.	Rs. 800
Period for which credit available.	1 month
Hence, Working Capital unlocked $5,000 \times 800 \times 1$	Rs. 40,00,000
(vi) Wages and Salaries:	
<u>a) Wages:</u>	
Monthly production	5,000 Units
Labour cost per unit	Rs. 600
Lag period for payment	1 Month
Hence, Working Capital unlocked $5,000 \times 600 \times 1$	Rs. 30,00,000
<u>b) Salaries:</u>	
Monthly production	5,000 units
Portion of Salaries in overheads	$\frac{1}{2}$
Overhead cost per unit	Rs. 200
Lag period for payment	1 Month
Hence, working capital unlocked $5,000 \times 200 \times \frac{1}{2} \times 1$	Rs. 5,00,000

7.11 WORKING CAPITAL MANAGEMENT UNDER INFLATION

To maintain the current level of activity, it is necessary to keep an eye on the rising need for capital. In times of inflation, this becomes even more important. The following strategies can be used to keep working capital needs under control during inflationary periods.

Greater disciplines on all segments of the *production front* may be attempted as under:

- a) The use of substitute raw materials without compromising quality may be considered. Further, research activities in this area may be undertaken with financial assistance from the government and the private sector.
- b) Appropriate motivational tactics must be used to boost labour productivity. Before implementing any incentive program, the cost must be balanced against the expected benefit. Despite the fact that wages are regarded a variable expense in accounting, they have tended to become somewhat fixed in character as a result of the influence of various legislative actions enacted by the governments over years. Increased productivity leads to an increase in value added, which lowers labour costs per unit.
- c) The controlled costs, such as office decorating charges, advertising, managerial wages, and payments, should be thoroughly examined in terms of their costs and advantages. These costs are more or less set, and it is difficult to back out after they have been committed. As a result, in order to reduce the cost impact of such products, the best possible use of facilities currently in place must be ensured. Further, management should exercise caution when authorising any new expenditure related to this expense.
- d) The increasing need to increase working capital will be mitigated to some extent if the operational cycle can be shortened. Increased turnover with shorter intervals and faster debtor realisation will help to alleviate the situation. Only when working capital is under strain the management become aware of the presence of slow-moving and outmoded inventory. The management has a habit of implementing haphazard remedies that are inadequate. As a result, a clear policy for the disposal of slow-moving and old stocks must be developed and followed. In addition, an effective management information system that reflects the stock status from diverse perspectives is required.
- e) The payment to creditors on time builds a positive reputation, which strengthens the firm's bargaining power in terms of credit terms and other circumstances. Cash flow projections should be established to ensure that cash inflows and outflows are in sync. If they don't, either some payments will have to be postponed or some avoidable products will have to be purchased.

7.12 EFFICIENCY CRITERIA

To a greater extent, a company's profitability is determined by how well it manages its working capital. In a dynamic domain like working capital, a single criterion would not be sufficient to judge or evaluate efficiency. The following are some of the criteria used to assess the efficiency of working capital management:

- a) Whether creditors have enough confidence in the company's capacity to repay its short-term obligations on schedule. As a result, a reliable indicator is whether a corporation can pay its debts on time. The finance

department must prepare to keep enough cash on hand to cover the maturing liabilities.

- b) Whether or not the highest potential inventory turnover is attained. Even the most efficient management of other components of working capital may not be enough to offset the negative effects of inefficient inventory management.
- c) Whether customers are given reasonable credit. This potent tool for increasing sales should not be abused. Receiving credit is the flip side of the same coin. Both factors are dependent on a company's strength as a seller and a buyer in this case.
- d) Obtaining appropriate credit from suppliers is contingent on the company's position with respect to its suppliers and the nature of the supply market, i.e., whether there is a single provider, an oligarchy, or a large number of suppliers. Even if there is only one supplier and his ability to control the market, buyers can negotiate competitive loan conditions if their efforts are coordinated. At times, the supplier imposes the credit terms as 100% advance, i.e., negative trade credit.
- e) Whether there are adequate safeguards to ensure that neither overtrading nor under trading takes place.

The following indices can be used for measuring the efficiency in managing working capital:

(a) Current Ratio (CR):

CR = Current Assets/Current Liabilities

It demonstrates a company's capacity to manage day-to-day business operations. It's beneficial to look at the working capital trend over time. Though the current 2:1 ratio is regarded optimum, it may need to be adjusted depending on the unique circumstances of a specific sector or industry. It is not only the quantum of current ratio that is important but also its quality, i.e., extent to which assets and liabilities are really current.

(b) Quick Ratio (QR):

QR = Liquid Assets/Current Liabilities

Current assets minus non-quickly realizable assets are referred to as liquid assets. In most cases, inventory and sticky debts are classified as non-quick assets. The optimum relationship between fast assets and current liabilities is 1:1, however it varies from industry to industry, depending on the conditions of that industry.

c) Cash to Current Assets:

$$\text{Cash to Current Assets} = \frac{\text{Cash}}{\text{Current Assets}}$$

Because cash does not earn any profit on its own, if cash is a substantial item of current assets, it may be a good sign of the organization's profitability. However, because cash does not earn any profit on its own, the proportion should normally be maintained low.

d) Sales to Cash Ratio:

Sales to Cash Ratio = Sales/Average cash balance during the period.

The purpose of this ratio is to turn the cash as many times as possible in order to make maximum sales with the least amount of cash in hand.

e) Average Collection Period

(Debtors/Credit Sales) x 365

This ratio explains how many days of credit a company is allowing its customers to settle their bills.

f) Average Payment Period

Average payment period = (Creditors/Credit purchases) x 365

It indicates how many days of credit is being enjoyed by the company from its suppliers.

g) Inventory Turnover Ratio (ITR)

ITR = Sales/Average Inventory

It indicates how many times inventory has cycled over in order to reach the sales goal. Inventory should be kept at a level that balances production capacity with sales demand.

h) Working Capital to Sales

Usually represented as a percentage, it denotes that a certain amount of working capital is necessary for a given amount of sales. If a sales growth is planned, it must be ensured that working capital is sufficient. As a result, this ratio aids management in preserving appropriate working capital for anticipated sales growth.

i) Working Capital to Net Worth:

The relationship between working capital and the funds owned by the owners is explained by this ratio. When this ratio is not closely monitored, it can lead to:

a) Overtrading when market conditions are favourable. The symptoms include:

- i) a high Inventory Turnover Ratio, and
- ii) a low Current Ratio;

b) When trading and the market conditions are not favourable. The following are the main symptoms:

- i) low inventory turnover ratio;
- ii) (ii) high current ratio.

As a result, effective working capital management should avoid both surplus and deficit working capital scenarios. Hence, an effective working capital management necessitates good management of current assets, as excess current assets provide no returns. Further, since cash and marketable securities are the least productive, they must be managed with greater caution.

Cash is a term that refers to a company's liquidity, and it plays a significant part in a company's growth and profitability. To avoid technical or legal insolvency, it is critical to create an accurate assessment of the financial requirement and plan accordingly. As a result, good cash management is required to provide enough liquidity.

Activity-7.2

Meet any financial executive of a corporate and speak with him about the management of working capital in his or her company, and then gather data on the following questions:

- a) What methods does the enterprise employ for efficient management of working capital?

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- b) Do the methods under (a) above include Ratio Analysis? What ratios are being computed and why?

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- c) What steps the organisation has taken in the recent past to improve the management of working capital?

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- d) What are the major problems faced by the enterprise regarding management of working capital?

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7.13 DETERMINING THE OPTIMAL CASH BALANCE

The excess cash is a non-profitable investment since idle cash does not generate any income. On the other hand, a cash shortfall may prevent a business from taking advantage of cash discounts and other advantageous opportunities. It may also result in the loss of creditworthiness as a result of failure to pay liabilities when they are due. As a result, every business, regardless of its size or industry, must identify the right or optimal cash balance.

- a) In general, a company's cash balance may fluctuate over time, so it is a good idea to look into the maximum, minimum, and average cash requirements during a given time period.
- b) You are aware that cash is required for a variety of business activities. Maintaining a cash balance, on the other hand, bears an opportunity cost in the following ways:
 - i) Cash can be used to purchase assets such as inventories or securities. If a specified minimum cash balance is not maintained, investment opportunities may be lost.
 - ii) Having cash on hand means it can't be utilised to mitigate financial risks associated with short-term borrowing.
 - iii) An over-reliance on domestically generated cash might isolate a company from the short-term financial markets.

The financial manager should now be aware of the advantages and disadvantages of having cash. After that, he must devise a model for calculating the optimal quantity of cash. To begin, a key minimum cash level should be established below which the company will face specific and measurable costs. Institutional requirements, like; credit ratings, checking accounts, lines of credit, and so on, justify the presence of the minimum amount in addition to risk aversion.

The failure to maintain a minimum cash balance will result in shortage costs, which will be defined by creditors' actions, such as deferring payments or failing to take advantage of cash discounts or other incentives.

At any point of time, a firm's cash balance can be represented as follows:

$$\text{Closing balance} = \text{Beginning Balance} + \text{Receipts} - \text{Disbursements}$$

There will be no problem if receipts and disbursements are equal for any unit of time. On the other hand, if the receipts are greater than disbursements or vice versa, the final balance will fluctuate. Receipts and disbursements do vary in practice, especially for businesses with seasonal activity.

If revenue and disbursements are not synced but the variance is foreseeable, the key challenge will be to reduce total expenses. You will face large transaction costs if you set the balance too low. You will lose interest if you

set the sum too high, which you can earn by investing cash in marketable securities. Under these conditions of known certainty, determining the optimal cash balance is similar to the inventory problem. The costs of too little cash (transaction costs) can be balanced against the costs of too much cash (opportunity costs). This is depicted in Figure-7.4.

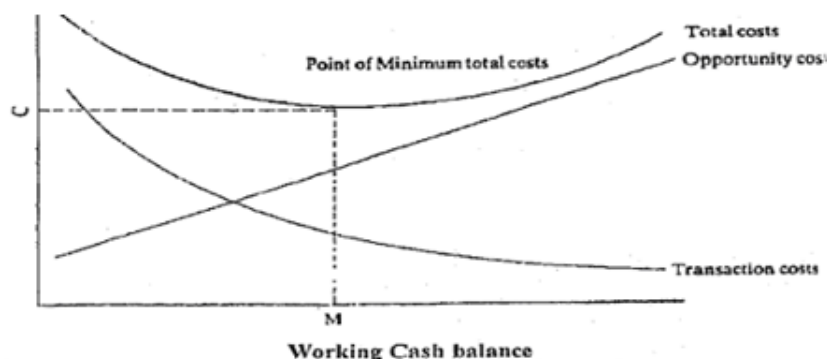


Figure-7.4: The Optimal Working Cash Balance

The minimum of two costs (opportunity and transaction costs) is shown by point 'C' in Figure-7.4. A good manager should aim to find this point while evaluating the best cash balance. Whereas the 'M' represents the ideal working cash balance.

Receipts and disbursements are almost never totally predictable. Let us consider an extreme example in which all receipts and disbursements are fully random: The Control Theory can be used to create a model with maximum and minimum optimal balances, as shown in Figure-7.5.

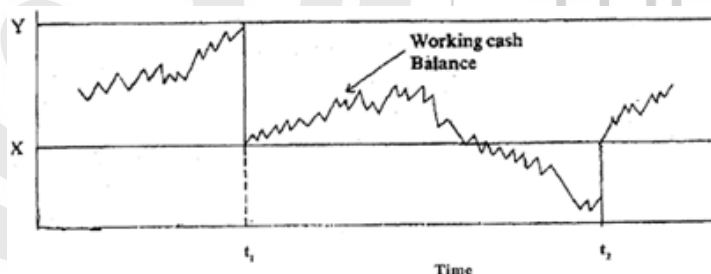


Figure-7.5: Cash Balance Control Limits

Figure-7.5 shows that the shifting cash balance is due to a variety of receipts and disbursements. The balance reaches the upper control point at time 't₁'. The extra cash is put in marketable securities at this time. At time t₂, the balance goes to zero, and marketable securities must be liquidated to replenish cash holdings. Only the maximum and minimum balances are shown at these two control points. As a result, in the case of uncertain cash flows (receipts and disbursements), the idea is that the more the variability, the higher the minimum cash balance.

Activity-7.3

Contact any financial executive of a company, whether in the public or private sector, and discuss the management of working capital in his or her

business with him or her. In this context, try to collect data on the following topics:

- i) What are the main groups of expenditure for which cash is needed in your firm?
 - a) on daily basis
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.....
 - b) on monthly
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.....
 - c) at irregular intervals
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.....
 - d) at regular intervals, other than daily or monthly basis
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.....
- ii) What are the main sources of cash and what arrangements exist for collection, accounting, and banking of cash receipts?
.....
.....
.....
.....

7.14 MANAGEMENT OF CASH FLOWS

The cash flows could be properly and effectively managed by following the techniques/methods mentioned below:

a) Speeding up Collections

To limit the amount of cash held, the interval between the sale of items and the cash collection should be as short as feasible, and the flow should be managed. Normally, certain elements that cause time lag are outside the management's control. The following elements should be considered in order to improve efficiency:

- All money gathered should be deposited into a single account. If there are many collection centres, all cash receipts should be transferred to the primary account as soon as possible using the technology available. When compared to a single collection center, the total amount of cash required will be higher when there are multiple centres. As a result of the concentration of collections in one location, the company will be able to manage its cash more efficiently.
- The period between the consumer sending a cheque and it being credited to our bank account should be minimized. Companies that have a lot of collection transactions use a lock box system. In this arrangement, post boxes are rented at various locations where cash and checks can be dropped off. The local banker can collect the money from the lockers on a daily basis. Service charges are paid to the collecting bank. Banks may be asked to create strategies to speed up cash collection in order to save time.
- The transfer of funds from one account to another has become simple with the present evolution of digital banking. The customer may be urged to send the funds via National Electronic Funds Transfer (NEFT)/Real Time Gross Settlement (RTGS) so that they are received quickly to the credit of the firm's account from any bank and location. In fact, for transactions up to Rs.2,00,000, the Immediate Payment System (IMPS) could be promoted to ensure that money is received immediately. These developments resulted in the discontinuation of the practice of issuance of cheques/demand drafts for making payments, and have led to efficient management of cash than in the past.

b) Recovering Dues

Receivables are generated after products are sold on credit, either as a convention or to promote sales. It may, however, be beneficial to reduce the amount of money held in receivables by ensuring that they do not become over due. Discounts for early payment may be offered as an incentive. A continual follow-up activity for the recovery of dues is more crucial than anything else. This will help to enhance the cash balance situation.

C) Controlling Disbursements

It goes without saying that increasing collection speed aids in the conversion of receivables into cash, thereby, lowering the firm's financing needs. Delaying disbursements can provide a similar type of benefit. Trade credit is a free source of finances since it allows us to pay creditors only after the agreed-upon credit period has lapsed. The payments might be deferred until the deadline. This will lessen the need to keep a big cash balance on hand. Some businesses may want to take advantage of cheque book float, which is the time between when a

cheque is issued and when it is actually presented for payment, either directly or through the bank.

d) Investment of Idle Cash Balances

How to calculate an acceptable cash balance and how to invest momentarily idle cash in interest-earning assets or securities are two other essential areas of cash management. The first portion, which dealt with the theory of determining an acceptable cash balance, was already discussed. Now we will talk about how to invest your idle cash balance on a temporary basis. Cash does not generate income on its own. If we know that we have more cash than we need for a short period of time, we must invest it to produce income while maintaining the benefit of fund liquidity. We must compare the benefits of carrying more cash (i.e., more than the minimum need) against the drawbacks of not carrying it. Carrying additional cash may be necessary in the future due to unpredicted or unanticipated demand. Cash flows cannot be forecasted with 100% accuracy, according to experience. It is difficult to estimate cash needs effectively due to competition, technical advancements, unanticipated product failures, strikes, and changes in economic conditions.

e) Investment Criteria

When it is understood that the surplus cash will be idle, it should be invested in a method that will provide income while also ensuring a speedy re-conversion of the investment into cash. When selecting channels for investing any idle cash balance for a short period, make sure that (i) the investment is free of default risk, which is the risk of not paying interest or repaying the principal on time; (ii) the investment will mature in a short period of time; and (iii) the investment will have adequate marketability. The ease with which an asset can be changed back into cash is referred to as marketability. It has two interconnected dimensions: price and time. If an asset can be sold quickly in large quantities at a price that can be predicted in advance, it is considered highly marketable and liquid.

7.15 SUMMARY

To function properly and economically, every business needs finances. The short-term uses of funds are reflected in a company's working capital. Apart from long-term assets such as buildings, plant, and equipment, money is also required to cover day-to-day operational expenses, for which cash kept in various current assets is used. For example, cash is used to purchase stock, which when sold results in a cash inflow, either immediately or after a time lapse in the case of credit sales. The rate of current asset turnover in relation to overall sales during a given period is essential to the total funds invested in those assets.

Many factors influence the amount of money that has to be put into current assets, and it might fluctuate over time. Some of the main aspects impacting

the quantity of working capital are the manufacturing cycle, production policies, financing conditions, growth and expansion needs, and inventory turnover. The requirement for operating capital is amplified by inflation. The steady growth in input costs, if not matched by a comparable rise in output prices, adds to the management's burden. However, by adopting a number of steps on the production front, as well as keeping a close eye on managing expenses and expediting credit sales collection, Management can restrict or at least reduce the need for additional working capital. Management should ensure that working capital is used appropriately and efficiently. Various financial ratios can be computed and compared against the specified rules for this purpose on a regular basis.

Cash management is just as vital as managing other current assets like receivables and inventories for effective working capital management. Too little capital may cause the company to become illiquid, forcing creditors and other claimants to stop doing business with it. When there is too much cash on hand, funds sit idle, and decrease the overall return on capital utilised below an acceptable level. A sufficient amount of cash is required to fulfil any unforeseen contingencies or liabilities, as well as the business's day-to-day operational expenses.

7.16 KEY WORDS

Operating Cycle in a manufacturing firm is the time gap between purchase of raw material and sale of finished products.

Gross Current Assets means the aggregate of all current assets including cash.

Net Current Assets means the aggregate of all current assets (including cash) less current liabilities. It is the same as the working capital.

Fixed Working Capital is the amount that remains more or less permanently invested as working capital in business.

Fluctuating Working Capital is the amount of working capital over and above the fixed minimum amount of working capital. It may keep on fluctuating from period to period depending upon several factors.

Inventory Turnover means the number of times the average inventory has been sold during a period. Inventory turnover ratio is obtained by dividing cost of goods sold during a period with average inventory for the period.

Current Ratio is explained as the relationship between current assets and current liabilities.

Quick Ratio is the relationship between quick assets and current liabilities. Generally, the inventory is not reckoned among quick assets and hence excluded.

Debtors Turnover is the relationship between average debtors (receivables) and average turnover.

Average Collection Period is the average period, which elapses between sale of goods on credit and the collection of cash.

Average Payment Period is the period, which elapses on the average between purchase of goods on credit and the payment to the creditors.

Credit Policy is concerned with the norms and guidelines for deciding whether and to what extent credit can be given to customers in general and to various categories of customers.

Credit Terms means the terms extended by a firm to its debtors for payment.

7.17 SELF ASSESSMENT QUESTIONS/ EXERCISES

1. Discuss the concept of working capital. Are the gross and net concepts of working capital exclusive? Explain.
2. Distinguish between fixed and fluctuating working capitals. What is the significance of such distinction in financing working needs of an enterprise?
3. Discuss the significance of working capital management in a business enterprise. What shall be the repercussions if a firm has (a) shortage of working capital and (b) excess working capital?
4. What factors a financial manager would ordinarily take into consideration while estimating working capital needs of a firm?
5. What is an operating cycle and how is a close study of the operating cycle helpful?
6. How would you judge the efficiency of the management of working capital in a business enterprise? Explain with the help of hypothetical data.
7. What is optimum cash balance and how can it be arrived at?
8. "In managing cash, the finance manager faces the problem of compromising the conflicting goals of liquidity and profitability". Comment. What strategy should the finance manager develop to solve this problem?
9. GVK Timber Ltd., a newly founded company, has applied for a short-term loan to a commercial bank for financing its working capital requirement. You are requested by the bank to prepare a statement on the requirement for working capital for that company. You may add 10% to your estimated figure to cover for unforeseen contingencies. The projected profit and loss account of the company is as under:

Sales		25,00,000
Cost of goods sold		<u>18,00,000</u>
Gross Profit		7,00,000
Additional expenses	1,80,000	
Selling expenses	1,50,000	<u>3,30,000</u>
Profit before tax		3,70,000

Provision for tax		<u>1,20,000</u>
Profit after tax		<u>2,50,000</u>
Cost of goods sold has been derived as follows:		
Material sold		9,60,000
Wages & manufacturing expenses		7,40,000
Depreciation		<u>3,00,000</u>
		20,00,000
Less Stock of finished goods estimated at 10% of production		<u>2,00,000</u>
		<u>18,00,000</u>

The figures above relate to the goods that would be finished (or completed) and not to work in process. Goods equal to 20% of the year's production in terms of physical units are expected to be in progress on an average, requiring full materials but only 50 per cent of other expenses. The company intends to keep two months' consumption of material in stock.

All the expenses will be paid one month in arrears. Suppliers of material would extend one-month credit. Sixty per cent of the sales are estimated on a cash basis while the rest are on two months credit. Seventy per cent of the income tax must be paid in advance in quarterly installments. The company will require Rs. 50,000 cash to meet day-to-day needs of business. To the question, you may ignore profit as a source of working capital.

7.18 FURTHER READINGS

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BLOCK-3

FINANCING DECISIONS

- Unit 8 Financial Markets
- Unit 9 Sources of Finance
- Unit 10 Capital Structure
- Unit 11 Leverage Analysis



UNIT 8 FINANCIAL MARKETS

Objectives:

After studying this unit, you should be able to:

- Explain the significance of Financial Market
- Appreciate the importance and role of Financial Markets
- Understand and compare the role of different Market Participants
- Identity the different types of Financial Markets, their features, purpose.

Structure:

- 8.1 Introduction
- 8.2 Role and Functions of Financial Markets
- 8.3 Types of Financial Markets
 - 8.3.1 Money Markets
 - 8.3.2 Capital Markets
 - 8.3.3 Equity Markets
 - 8.3.4 Debt Markets
 - 8.3.5 Derivative Market
 - 8.3.6 Commodities Market
 - 8.3.7 Foreign Exchange market
 - 8.3.8 Other Markets
- 8.4 Participants in Financial Markets
 - 8.4.1 Participants in Money Markets
 - 8.4.2 Participants in Capital Markets
- 8.5 Summary
- 8.6 Key Words
- 8.7 Self Assessment Questions
- 8.8 Further Readings

8.1 INTRODUCTION

"Market" is conventionally defined as a place where buyers and sellers meet to exchange goods, services or financial products, and instruments for a consideration. The markets may be classified as follows:

- **Product market**, where goods and services are traded,
- **Factor market**, where labour, capital and land are exchanged; and
- **Financial market**, where financial claims are traded.

A financial market is a system of processes and functions that are usually regulated by means of rules and guidelines for enabling participants to transact in financial products and instruments (financial claims). The financial markets are markets crucial in promoting economic efficiency by

channelising funds from those who do not have immediate requirement for funds (savers) to those who require them for productive purposes (investors). In these markets, financial assets such as stocks and bonds could be sold and purchased. They facilitate the flow of funds for financing and investing by households, firms, and government agencies.

8.2 ROLE AND FUNCTIONS OF FINANCIAL MARKETS

The financial market is a place or mechanism where funds or savings are transferred from surplus units to deficit units. In the absence of financial markets, it is difficult to transfer funds from a person who has no investment opportunities to one who has them. The financial markets are thus essential to promote economic efficiency.

All the countries, irrespective of their state of development, need funds for their economic development and growth. In an economy, funds are obtained from the savers or surplus units (the units which have more income than their consumption) which may be household individuals, firms, public sector units, government, etc. There are certain investors or deficit units whose consumption or investment is more than their current income.

In any economy, flow of funds from surplus units to deficit ones is essential for desired achievement of national goals and priorities. For this, appropriate financial instruments and opportunities must be available. The financial markets provide the platform for such flow where each saver can find and exchange the appropriate financial assets as per his/her requirement. Therefore, the efficiency of financial market depends upon how efficiently the flow of funds is managed in the country. Further, the financial market must induce people to become producers/entrepreneurs and motivate the individuals and institutions to save more.

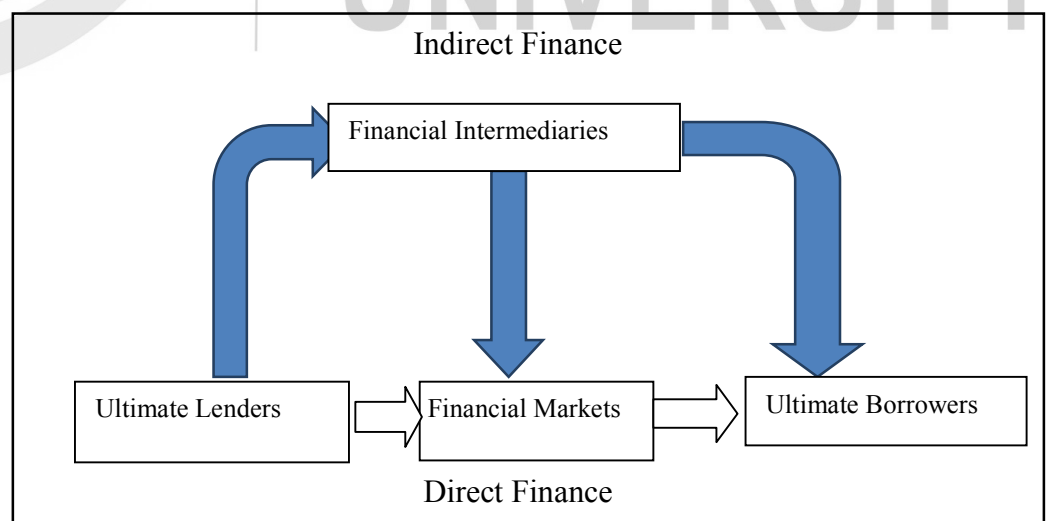


Figure: 8.1: Flow of Funds From Lenders to Borrowers

Figure-8.1 is a simplified form of flow of funds from saving-surplus units (ultimate lenders) to saving-deficit units (ultimate borrowers). The flow of funds moves from left to right, either directly through financial markets or indirectly through financial institutions.

The financial markets not only help in the fast growth of industry and economy but also contribute to the society's well-being by raising the standard of living. Thus, the financial markets play a significant role in the allocation of the savings in efficient production of goods and services and assist in achieving the desired national objectives.

Functions of Financial Markets

The functions of financial market can be classified into three categories: (a) Economic Functions, (b) Financial Functions, and (c) Other Functions.

a) *Economic Functions:* The financial markets play a very important role in the economic growth of a country. The way it helps in the economic growth is as follows:

- It facilitates the transfer of real economic resources from sellers to ultimate users of economic resources.
- Lenders/investors earn interest/dividend on their surplus investable funds, thereby increasing their earnings, and as a result, enhancing national income finally.
- Borrowers generally use borrowed funds productively, if invested in new assets, thereby increasing their income and gross national products finally.
- By facilitating transfer of real resources, it serves the economy and finally the welfare of the public.
- It provides a channel through which new savings flow into capital formation of a country.

b) *Financial Functions:* As already discussed these markets facilitate in the flow of funds from surplus units to deficit units. In this process there are several functions that it performs. Some of those are as follows:

- It provides the borrowers with funds which they need to carry out their plans.
- It provides the lenders with earning assets so that their wealth may be held in a productive form without the necessity of direct ownership of real assets.
- It provides liquidity in the market through which the claims against money can be resold at any time, and thus, reconverting them into current funds.

c) *Other Functions:* In addition to the above, the financial markets perform three more functions such as;

- *Price Discovery:* The interaction of buyers and sellers in a financial market determines the price of the traded asset. The inducement for firms to acquire funds depends on the required rate of return that investors demand, and it is this feature of financial markets that signals how the funds in the economy should be allocated among financial assets. This is called the price discovery process.

- *Liquidity*: Financial markets provide a mechanism for an investor to sell a financial asset. In the absence of liquidity, the owner will be forced to hold a debt instrument till it matures and an equity instrument till the company is, either voluntarily or otherwise, liquidated.
- *Reduces Costs*: It reduces the search and information costs of transacting. Search costs represent explicit cost, such as the money spent to advertise the desire to sell or purchase a financial asset, the implicit costs such as the value of time spent in locating a counterpart.

Activity 8.1

a) What do you mean by the term 'Financial Markets'?

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b) Give any two important functions of any financial market?

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8.3 TYPES OF FINANCIAL MARKETS

The financial markets comprise of all banking and non-banking financial institutions, procedure and practices followed in these markets, and financial instruments for facilitating the flow of funds. The classification of financial markets in an economy is shown in Figure-8.2.

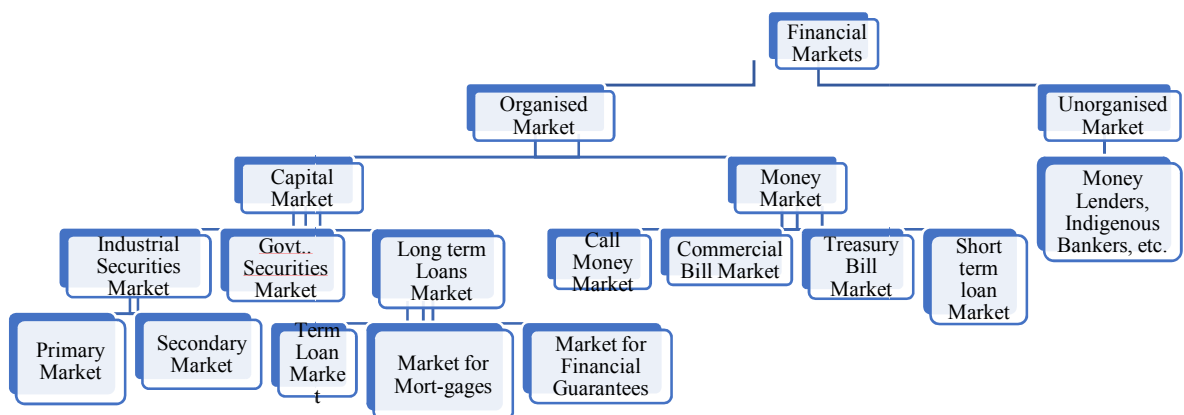


Figure-8.2: Structure of Financial Market

On the basis of the period of maturity of the securities traded, the markets are classified as Money Markets and Capital Markets. These markets are again classified as primary markets and secondary markets. We will be discussing each of these markets in detail.

8.3.1 Money Market

Money Market is defined as a market for overnight to a short-term money and for financial assets that are close substitute for money. The meaning of "short-term" refers to a duration of less than or equal to 1 year. The phrase "close substitute for money" denotes any financial asset that can be quickly converted into money with minimum transaction cost and without loss of value. Participants in this market either have excess funds which they would like to invest for short duration (from overnight to 1 year) or have an immediate shortage of funds and would like to borrow in the short-term. The market is a wholesale market for a collection of different short term debt instruments. Its principal feature is the credit worthiness of the participants.

The Indian Money Market is divided into organised and unorganised markets. The unorganised money market consists of indigenous bankers and money lenders. The unorganised money market differs from organised market in many respects like organisation, operations, interest rate structure, etc. The indigenous bankers and money lenders are active in the small towns and villages, and partly in big cities, where farmers, artisans, small traders do not have access to the modern banks. They are outside the control of the Central Bank. The rates of interest differ in the unorganised sector from those in the organised sector. The key objectives of the money markets are:

- To facilitate an equilibrium between demand and supply of short-term funds.
- Provide a focal point for Central Bank intervention for influencing liquidity in the economy.
- Facilitate easy access for users and suppliers of short-term funds to meet their requirements at an efficient market clearing price.

The banking system is the most dominant force in the Indian money market.

Significance of Money Markets: The money market plays a significant role in the economy. It serves as a market for transactions of a short period. Money Market offers the facility of adjusting liquidity for the business corporations, banks, financial institutions, and non-banking financial institutions and to investors.

After 1990, a liquid money market emerged in India. The specialized institutions called Primary Dealers (PD) were established. This also coincided with the formation of the Money Market Mutual Fund (MMMF). Interest rates were also deregulated, and eligible participants were enlarged. Presently, the structure of the Indian money market instruments consists of call/notice money market, commercial bills market, Treasury Bills (T-Bills), Commercial Papers (popularly known as CP), Certificates of Deposit (CD) and the Repo Market. The RBI uses Open Market Operations (OMO), bank

rate, Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), Repo transactions to control liquidity and manage interest rates.

Activity 8.2

a) List down the different types of Secondary Markets.

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b) What is the importance of Money Markets?

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Having discussed about the Money Markets lets now understand about the Capital Markets.

8.3.2 Capital Markets

Markets that facilitate the sale of long-term securities by deficit units to surplus units are referred to as capital markets and the securities traded in these markets are known as capital market securities. It involves raising finance through issue of publicly traded financial instruments in equity and debt that can be bought and sold at any time for a longer duration. These markets also offer a wide scope of raising debt capital through issue of long-term debt. Thus, the capital markets become an avenue of bank disintermediation. It not only brings the investors of funds and issuers of "financial claims" together on an alternative platform, but also helps in movement of debt capital- a function that was primarily the domain of banks and financial institutions until the mid-1980s and early 1990s.

Functions of Capital Markets: The major functions of Capital Markets are as follows:

- They improve the efficiency of capital allocation through a competitive pricing mechanism.
- These markets lower the costs of transactions.
- They encourage broader ownership of productive assets.
- Mobilize long-term savings to finance long-term investments.
- Provide risk-capital in the form of equity or quasi-equity to entrepreneurs.
- Disseminate information efficiently.

- Facilitate Price discovery of financial instruments.
- Risk Management to mitigate against market risk (price volatility).
- Enable wider participation.
- Improve integration between different markets and different asset classes, real and financial sectors of the economy, long and short-term funds, private and Government sectors, domestic and external funds.
- Support Direct flow of funds into efficient channels through investment, disinvestment and reinvestment.

The modern-day capital markets have become a catalyst for wealth creation. A vibrant and efficient Capital Market is the backbone of a healthy economy. India has become a global reference point and the Indian Capital Markets structure - systems, processes and institutions - have become a global benchmark to be emulated. Many developing countries have taken cues from the Indian capital markets for establishing similar structure in their respective countries.

Capital Markets can be classified further into Primary and Secondary Markets, which deal with issue of new securities and trading of existing securities, respectively. Let us understand the characteristics of Primary and Secondary markets.

a) Primary Markets

Primary Market is a segment of capital markets that deals with the issuance of new securities. Corporate, Government, Public Sector Units, Banks, and Financial Institutions can obtain funding through the sale of financial claims such as stocks, bonds, debentures, etc. This is typically done through a syndicate of securities dealers. In the case of first time of stock issue, this sale is usually referred to as an "Initial Public Offering" (IPO).

b) Secondary Markets

Secondary Market is the segment of Capital Markets relating to trading of already-issued (outstanding) securities. Secondary Markets usually follow either an auction-based system or dealer-based system. While the stock exchange is part of an Auction Market, Over the Counter (OTC) market is a dealer-based system. For the general investor, the Secondary Market provides an efficient platform for trading of securities. The fair price of the security is "discovered" in the secondary markets - thus leading to either price appreciation or depreciation. Banks facilitate secondary market transactions by opening direct accounts to individuals and companies. Banks also extend credit against securities. Banks may also act as clearing houses.

The establishment of "Secondary Markets" in the form of stock exchanges (for trading in equity market offerings such as shares) and Primary Dealers (PD) - who provide two-way quotes for Government Securities and Corporate Bonds - facilitated the liquidity for the purchase of these financial claims. Typically, an investor can directly purchase these "financial claims".

Alternatively, investors can purchase these financial claims indirectly by way of mutual fund units, security receipts or pass-through certificates. The Indian Secondary market can be segregated further based on the characteristics of the financial instruments or securities that are exchanged. Some of these are discussed here:

Exchange Markets: Exchange markets are organized trading platforms, whereby; buyers and sellers can transact. It is an organized marketplace with rules and regulations for trading in financial products and instruments. The financial products and instruments are standardized in terms of quantity and quality. These are highly regulated markets, with no possibility of default by market participants. The most common form of organized trading of futures and options, the open-outcry system with its shouting and hand waving by traders on the exchange trading-floor, is highly transparent. A clearing house guarantees transactions on organized exchanges; a default by an intermediary is unlikely to lead to losses for market users.

Over the counter (OTC) markets: The over-the-counter market is largely a direct market between two counter parties who know and trust each other. Contracts are directly negotiated, tailor-made for the needs of the parties, and are often not easily reversed. All transactions that are directly negotiated between entities (also referred to as counterparties to the transaction) outside the exchange trading platform. Public price quotations for the over-the-counter market are only just being introduced, and the quotations are only for the more heavily traded instruments. To get a fair deal on the over-the-counter market, good information gathering, and negotiation skills are required. Over-the-counter market transactions are guaranteed only by the reputation of the counterparty; if the counterparty goes broke, large losses may ensue.

8.3.3 Equity Markets

Equity is viewed by the market as an ownership "share" in the revenue stream of a corporation's income after all prior obligations (including outstanding debt) has been satisfied. The "share" price is the relative value given to the Corporation's earning potential based on several factors. These include general economic conditions, both in the industry and in the overall economy, earnings projection, projected corporate growth, stage of development and financial ratio analysis. A share of stock in the firm represents ownership.

Equity markets facilitate the flow of funds from individual or institutional investors to corporations. These markets enable corporations to finance their investments in new or expected Business Ventures and also facilitate the flow of funds between investors. Generally, the structure of equity is that a "share" of the corporation represents the current market value of the firm, and secondary to this is the potential for dividend income. There are various classes of equity for the individual investor to consider.

8.3.4 Debt Markets

Debt Markets involve issuance, trading, and settlement of fixed income securities such as bonds of various tenors. Debt Market instruments can be

issued by Central and State Governments, Public Sector Units, Statutory Corporations, Banks, Financial Institutions and Corporate Bodies. The debt market in most developed countries is many times larger than other financial markets - including the equity markets. The key functions of Debt Markets are:

- Efficient mobilization and allocation of resources in the economy.
- Financing the development activities of the Government.
- Transmitting signals for implementation of the monetary policy.
- Facilitating liquidity management in tune with overall short-term and long-term objectives.
- Reduction in the borrowing cost of the Government and enable mobilization of resources at a reasonable cost.
- Provide greater funding avenues to public-sector' and private sector projects and reduce the pressure on institutional financing.
- Government Securities Markets (usually referred to as the G-Sec market) commands over 90% of the volume of transactions in the debt market. It is the principal segment of the debt market in India.

Traditionally, the Indian debt market has been restricted to a few institutional players - mainly Banks and other participants including primary dealers, mutual funds etc. Banks have a statutory requirement (under RBI regulations) to maintain a specific percentage of their deposits in the form of Government Securities - also called the Statutory Liquidity Ratio (or SLR). Thus, RBI instituted reforms in the debt market. But despite these reforms, volumes are usually low in the corporate debt market and the PSU debt market segments.

Some of the important segments of the Debt market are:

i) ***Government Securities (G-Sec) Market:***

These are sovereign (credit risk-free) coupon bearing instruments which are issued by the Reserve Bank of India on behalf of Government of India, for the Central Government's market borrowing programme. These securities have a fixed coupon i.e., paid on specific dates on half-yearly basis. These securities are available in wide range of maturity dates even upto 30 years.

ii) ***Corporate Debt Market:***

In the last decade, several innovations have taken place in the corporate bond market, such as securitized products, corporate bond strips and a variety of floating rate instruments with floors and caps and bonds with embedded put and call options. However, the secondary market has not yet developed in the debt segment of the Indian capital market. Furthermore, the corporate debt market in India remains underdeveloped as large domestic institutional investors, such as pension funds and the insurance sector, are restricted from allocating large portions of their investment funds in the corporate bond segment.

iii) **Debentures:**

Debentures are a type of financial claims issued by a company. The buyers of debentures are the creditors of the company, who have invested capital in the company. In return for the invested capital, the debenture holders would obtain a fixed rate of interest usually payable annually or half yearly on specific dates. The principal amount is paid back by the company to the debenture holders on particular future date - that is the redemption date of the debentures. The terms of reference of the debenture or bond may be customized in such a way that the principal may be payable (back to debenture holder) at regular pre-specified intervals. In some instances, convertible debentures are also issued, whereby the debentures can be converted into equity shares later.

iv) **Bonds Market:**

Bonds refer to negotiable certificates evidencing indebtedness. It is normally unsecured. A debt security is generally issued by a company, municipality or government agency. A bond investor lends money to the issuer and in exchange, the issuer promises to repay the loan amount on a specified maturity date. The issuer usually pays the bondholder periodic interest payments over the life of the loan. The various types of Bonds are as follows:

- **Zero Coupon Bond:** Bond issued at a discount and repaid at face value. No periodic interest is paid. The difference between the issue price and redemption price represents the return to the holder. The buyer of these bonds receives only one payment, at the maturity of the bond.
- **Convertible Bond:** A bond giving the investor the option to convert the bond into equity at a fixed conversion price.
- **Callable Bonds:** This provides flexibility to the company to redeem the issued outstanding bonds on a specific future date.
- **Puttable Bonds:** This provides flexibility to the investor to seek redemption of the bonds that he/she has purchased, on specific future date.

8.3.5 Derivative Market

Financial instruments that derive their value from underlying asset are commonly referred to as 'derivatives'. When the need arose to mitigate risk due to vagaries of commodity prices, derivative instruments were developed. Initially, these pertained to linear pay-off structures such as forward and futures contracts. Subsequently, in the early 1980's, more complicated derivative contracts such as options and swaps were structured.

Over the counter market instruments are not standardised and contains clauses and conditions as per the requirements of buyers and sellers. Risk associated with over-the-counter market instruments is significantly high. This pertains to the risk of default by counterparties to transaction. Legal recourse to such default is usually expensive and time-consuming. There was

also the risk of illiquidity in case the hedger wants to exit from the contract. This was the reason for emergence of organised marketplaces for derivatives in commodity market and capital market.

Development of exchanges also led to the system of novation, by which, the clearing house became the central counterparty for all transactions. This ensured that there was no risk of default in settlement. The actual settlement of profits and losses was completed on daily basis, giving rise to the concept of mark-to-market settlement. Derivatives are presently traded not only in commodity markets, but also in equity markets, currency markets and debt markets.

8.3.6 Commodities Market

A market where commodities are traded is referred to as a 'Commodity Market'. These commodities include bullion (gold, silver, platinum, palladium), ferrous (steel) and non-ferrous metals (copper, zinc, nickel, lead, aluminium, tin), energy products (crude oil, natural gas, heating oil, gasoline, etc.), agricultural commodities (refined soya oil, pepper, palm oil, coffee, pepper, cashew, almonds, etc.). Existence of a vibrant, active, and liquid commodity market is normally considered as a healthy sign of development of a country's economy.

Global commodity markets have evolved in the last several years with the emergence of the organised financial market place. The need to mitigate risk due to the volatility in asset prices led to innovation of sophisticated financial instruments. Improved satellite technology with superior digital communication and faster processing speed facilitated emergence of electronic trading platforms that are accessible with secure connectivity even from distant locations.

Activity 8.3

- a) What do you understand by the term 'Commodities Market'?

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- b) List down any three Regional Commodities Exchanges in India.

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8.3.7 Foreign Exchange Market

The foreign exchange market in India is regulated by Reserve Bank of India (RBI). Guidelines have been established for trading in foreign exchange.

Limits have been clearly specified by the RBI for investments abroad and the policy for purchase of foreign exchange when an individual is travelling to a foreign country or for any other purpose.

Exposure to derivative transactions for foreign currency as the underlying asset can be on currency future exchanges and provides an avenue to hedge risk generated by currency movements. Banks, in turn, need to hedge their exposures on a back-to-back basis, with counterparties in India or abroad (especially for non-USD INR derivatives transactions).

8.3.8 Other Markets

It has been analysed in the preceding few sections of this unit the specific characteristics of money markets, capital markets comprising of debt and equity markets, currency markets, commodity markets and the derivatives markets. In this section, we shall discuss the classification of markets from the perspective of investment and business activities.

Loan Markets:

Loan Market refers to the activities of banks and financial institutions to make available, credit for corporate sector. The credit may be extended for trading, manufacturing, infrastructure, service, industrial manufacturing, and financial activity or otherwise. Loans may be for short term or long-term. Usually, credit rating agencies assess the creditworthiness of the corporate. The specific credit rating is used for making decisions by banks and financial institutions to lend to the borrower.

Insurance Markets:

After the liberalization of the Indian economy and the commencement of financial sector reforms, private sector was allowed to start life insurance and general insurance activities. With a growing population, insurance is required by everybody. But Insurance companies are allowed to operate by adhering to strict compliance measures, due to the high level of risk involved.

Retirement Savings Markets:

Retirement Savings Markets are long term funds pooled from investors by provident funds, pension funds and superannuation funds. They perform the important activity of providing resources and security for individuals in their old age. These funds are invested in long term securities.

Mutual Funds:

Mutual Funds provide the means for the small investors to reduce transaction cost, while trading in the securities markets. Professional mutual funds have analysts who take calls on the market for collectively investing the corpus of the funds provided by the investors. Mutual funds are regulated by the Association of Mutual Funds in India (AMFI), which is a self-regulatory organization.

The savings and investment markets consist of several retail financial savings products for the household sector. Whereas the corporate sector relies on banks and financial institutions for credit, the household sector is dependent on not only banks and financial institutions (that provide retail products), but also chit funds, Nidhis, and mutual benefit societies.

8.4 PARTICIPANTS IN FINANCIAL MARKETS

The different participants acting as intermediaries for facilitating the flow of funds from surplus units to deficit units in the Financial Markets are being discussed below:

8.4.1 Participants in Money Markets

Money market is the place or mechanism where short term funds are raised. These funds are obtained at the varying rates depending upon the sources of funds, the credit standing of the borrowers, maturity period, etc. The main players in this market are the Reserve Bank of India (RBI), Discount and Finance House of India, Mutual Funds, Banks, Corporate Investors, Non-Banking Finance Companies (NBFC), State Governments, Provident Funds, Primary Dealers, Securities Trading Corporation of India (STCI), Public Sector Undertakings (PSU) and Non-resident Indians (NRI). Following is a brief discussion of these participants:

- i) **Central Bank:** The Central Bank of any country is the apex monetary institution in the money market. The Reserve Bank of India is the central bank of our Country, which regulates and makes policy relating to monetary management in the country. It serves as the government bank because it performs the major financial operations of the government. It is one of the major participants in the money market as it participates in a big way in the market to purchase and sell various securities, specifically those issued by the Government. The Central Bank participates in financial markets in different ways as mentioned below:
 - By issuing of currency notes which are directly and solely under the purview of the Central Bank. For example, in our country Reserve Bank of India (RBI) has been given the sole authority to issue various currency notes except one-rupee notes and coins and subsidiary coins. For this purpose, the RBI maintains a separate department known as the Issue Department.
 - By working as the agent and adviser to the Government specifically concerning to the financial matters, such as loans, advances, servicing of debts, etc. It also performs such functions of the Government departments, boards, and public undertakings. It also decides to meet the financial requirements; both short term as well as long term in anticipation of the collection of taxes or raising funds from the public.
 - By acting as bankers' bank in the financial market, the Central Bank

regulates the banking operations in the country. How much rate of interest would be charged and paid on advances and deposits by the bankers is influenced by the Central Bank through various policy measures. Undoubtedly, the Central Bank holds a privileged position, and all the commercial banks have to deposit a pre-decided fixed percentage of their deposits with it.

- By maintaining adequate foreign exchange reserve for meeting the requirements of foreign trade and servicing of foreign debts. It also ensures the stability of the currency at international level. For these purposes, the Central Bank has to participate in a big way in domestic as well as in foreign financial markets.

Thus, it is evident that Central Bank of the country plays a significant role in money market by participating in different capacities.

- ii) **Commercial Banks:** The other significant participant in the money market of a country is commercial banks. A major portion of the total operations of the money markets are conducted through the commercial banks. The basic functions of commercial banks are borrowing and lending of money. They borrow money by accepting all kinds of deposits from the public at large, repayable on demand or otherwise. Thus, these banks employ the pooled funds in the form of loans and advances to those who need them.

The different ways in which the commercial banks participate in the money market are:

- By assisting in mobilising the public savings which are normally in the form of small holdings and then combining the same into a huge lot for the purpose of providing credit to the various sectors of the economy.
- By meeting the short-term working capital needs of the business firms through the mechanism of cash credit, discounting bills, hundis, promissory notes, overdraft facility and other short-term debt instruments.
- Apart from accepting deposits and granting loans and advances, the commercial banks also provide a range of other services in the capacity of agent, for their clients.
- By collecting the amounts arisen due to interest, dividend, rent, salary and wages, commission for their customers.
- These banks also, sometimes, advise their clients relating to sale and purchase of various securities and in designing their investment portfolio.

- iii) **Indigenous Financial Agencies:** Indigenous financial agencies are important participants in money market, especially in unorganised sector. They comprise of money lenders (Village Sahukars) and indigenous bankers. Money lenders are normally referred to those persons whose

main business is to provide financial assistance to rural farmers, artisans, and others. On the other hand, indigenous banker is referred to an individual or private firm receiving deposits and dealing in hundis or lending money. However, it is very difficult to draw a line between money lenders and indigenous bankers.

Some of the features of Indigenous financial agencies are:

- They finance trade including the movement of agricultural commodities such as cotton, oil seeds, sugar, and others.
- The main technique of their financing is discounting of hundis and bills.
- They also lend money by mortgaging immovable property, like houses, land, fixed assets, etc.
- The rate of interest charged by them is normally high in comparison to the banks.
- Their lending policy is flexible and informal which is based on their personal contacts with the clients, which is not uniform and vary from place to place.
- The loans are provided mostly on personal security, so the size of loan and the rate of interest to be charged also differ from client to client.

In brief, indigenous financial agencies provide financial assistance, usually short-term to rural and semi-urban borrowers at different rates of interest depending upon the personal capability and risk involved.

iv) **Discount Houses:** Discount houses are important constituents of the money market. The major function of these houses is to discount trade bills of traders to provide adequate liquidity in the market. Discount houses play a significant role in business world specifically in money market, such as;

- Assisting the market by making it more liquid by discounting the trade bills. Further, by endorsing these bills, they sell these bills to commercial banks to raise funds so that they can facilitate this service further to the traders.
- Providing guarantee to the bankers for payment of bills on maturity by the traders. In case of default, they take the responsibility of payment. In this way, discount houses provide very flexible instrument whereby the bankers can adjust their cash positions through these houses.
- Besides discounting the trade bills, they also deal in short term government securities. From the past practice of the discount houses of London, it is observed that these houses also invest in Treasury Bills, commercial bills, other Government securities, bonds and certificates issued by the local authorities and public corporations.

Thus, the discount house is an important constituent of a developed money market. This facility is normally provided by the commercial banks and other financial institutions in our country.

- v) **Acceptance Houses:** Another important participant in the money market is Acceptance House. They play a significant role in providing more liquidity in the money market through borrowing short-term loans from the banks and lending the same to the traders. These are not only accepting the bills which are drawn on them, but also perform some other functions like normal banking facilities; both domestic and foreign, short-term loans to the traders, regulating their clients' open credit, advising on shipping and insurance problems arising out of the financing of trade, etc.

Acceptance houses provide adequate liquidity in the secondary market through accepting the bills so that these (bills) can easily be discounted by the discount houses and other banks. However, the existence of these houses is very rare and is seen only in developed money market like London money market. In India, the market is still in its infancy stage of such participants.

8.4.2 Participants in Capital Markets

In this section, financial institutions and other agencies which are actively participating in or facilitating the capital market are described. These institutions can be classified into two categories:

- a) Banking Institutions
- b) Non-Banking Financial Institutions

Some of these institutions may be directly participating in the capital markets while others may be indirectly connected by way of providing intermediation services to the companies, investors, stock brokers and others.

- a) **Banking Institutions.** The various forms of banking Institutions are Commercial Banks, Cooperative Banks, Land Development Banks, Foreign banks, Regional Rural Banks, etc.
- i) **Commercial Banks:** Some of the important activities of the Commercial Banks are:
 - The commercial banks accept long-term deposits from the public at large providing them opportunity to invest their savings. Further, now these commercial banks also meet long term funds requirement of all types of business undertakings like tiny, small, medium, and large units.
 - They also provide long term finance to transport operators for buying the vehicles, dealers in various goods, farmers, professionals, and self-employed persons, etc.
 - Banks also provide long term finance for special purposes like advances against Fixed Deposits Receipts, Advances against Gold

gold ornaments, advances for durable goods like vehicles, televisions, refrigerators, washing machines, furniture, etc.

- They also assist for construction of houses, purchase of plots and expansion or renovation of the existing building.

ii) **Co-operative Banks:** Another important constituent of banking system which facilitates the general economic activities is cooperative banks. The basic function of these banks is to provide financial assistance to agriculturalists and others, normally through cooperative societies. In fact, these banks normally focus on providing short- and medium-term financial requirements to agriculturists, artisans, and others. Land development banks meet long-term and medium-term funds requirement of agriculturists to purchase agricultural machinery and implements, affecting permanent improvement in land, liquidating old debts, etc.

b) **Non-Banking Financial Institutions:** Apart from some banking concerns described above, a lot of economic activities are performed by the other financial institutions which are of non-banking nature. They actively participate in capital transformation process from sellers to investors in an economy. They collect funds by accepting deposits from individuals and others and lend them to trade, industries, government, etc.

The various forms of non-Banking Financial Institutions and their role in Financial Markets are described hereunder:

i) **Investment Banks:** Investment banks are very much popular in developed countries specifically in USA. Investment banking institution may be defined as financial intermediary which is responsible for garnering the savings of thrifty people and directing these funds into the business enterprise. The basic functions of these investment banks are:

- **long term financing of business undertakings** – it is concerned with the formation of new capital, related with the participation information of new capital for both new as well as old undertakings.
- **marketing of shares and debentures** - It includes all such activities like originating, under-writing, purchase, and sale of securities, etc.
- **acting as security middlemen** - it comprises of working as broker or dealer, offering security, counselling, advising, security substitutions and other allied services.
- **Advising** in marketing of an issue.
- **Acting as an insurer** instead of outright purchase of security, etc.

On the whole, these institutions play a significant role by providing the necessary capital for the long term needs of business world. That is why,

these are also known as the 'entrepreneurs of entrepreneurs. Some of these functions have been taken over by merchant banks in India.

ii) **Merchant Banks:** Merchant banking activities are first developed in early nineteenth centuries in the U.K., when trade between countries was financed by bills of exchange drawn on the principal merchant houses. Lately it has attracted the attention of all financial and consultancy firms. Basically, merchant banking activity is an institutional arrangement providing financial advisory and intermediary services to the corporate sector. In fact, there is a wide range of financial activities which come under the purview of merchant banking, a few among these are narrated below:

- **Corporate Counselling:** The major function of a merchant banker is to advise the corporate sector units on various matters like in locating area/activities of growth and diversification, appraising product lines and future trends, rejuvenating old company and failing sick units by appraising their technology, process, etc.
- **Project Counselling:** Project counselling is another important merchant banking activity which includes preparation of economic, technical, financial and feasibility reports. Further, it also covers project viability and procedural steps for its implementation. Besides these, project counselling may include identification of potential investment avenues and pattern of financing.
- **Capital Restructuring:** The basic objective of capital restructuring is to advise the management of the company in designing its capital structure in such a way that it could achieve maximum potential out of its financial resources. This may include redesign of debt-equity ratio, reserve and surplus, capitalisation of reserve, asset structure ratio, debt servicing with overall impact on funds generating capacity of the corporate unit.
- **Issue Management:** The basic objective of issue management activity is to make all arrangements for mobilising resources from the capital market for its client by issuing securities like equity shares, preference shares, debentures, etc. This includes taking consent/approval of the Government Agencies, drafting of Prospectus, selection of Brokers, Under-Writers, Bankers, Registrar, Advertising Agency, etc.
- **Portfolio Management:** Merchant bankers render expert advice on matters pertaining to portfolio management of their clients. They advise which securities should be purchased or sold and assist in designing optimum portfolio within the purview of risk, return and tax bracket of the investors.
- **Credit Syndication:** The merchant bankers make arrangement of credit procurement and project finance for their client units. In this regard, they contact with banks and other financial institutions both in India and abroad for raising rupee and foreign currency loans.

Sometimes, they also arrange bridge finance and other funds for cost escalations or cost over-runs.

- **Corporate Restructuring:** External restructuring for the overall better performance of corporate units is another important service rendered by the merchant banks. The merchant banks assist in such negotiation and also guide in legal documentations, official approval, tax matters, etc, of the proposed merged unit.
- **Working Capital Finance:** The merchant banks assist in arranging working capital finance for their clients. They advise the possible sources from where the working capital finance can be arranged. Further, sometimes, they also manage to enhance cash credit facilities for their clients.
- **Credit Bills Discounting:** This is one of the major services which is rendered by the merchant banks specially in developed countries, like U.S.A., U.K., etc. They make arrangement for providing bills discounting facilities for their clients after contacting the acceptance houses and discount houses.

iii) **Investment Companies:** Investment companies are such institutions, which collect the funds from the people through a specific financial instrument, i.e., unit, share, debenture, etc., and then invest these pooled funds in the suitable securities depending upon the objective of that scheme. The major investment type companies include investment trusts, mutual funds, common trust funds of commercial banks, management investment companies, unit trusts, etc. These investment companies can be classified into two categories:

- a) Management Investment Companies
- b) Unit Trusts.

a) **Management Investment Companies:** The Managements of these trusts enjoy wide discretionary powers relating to selection of various securities for designing of their investment portfolio. The schemes of these companies can further be divided into two categories; *close ended and open ended*. In the first category, the capitalisation of the scheme is fixed and not changed before a particular period. In other words, unit holders cannot get back their investment from these companies before a particular period. Whereas in the case of open-ended companies, the investors can sell and buy their units from the company, and hence, no limit to capitalisation.

b) **Unit Trust:** This is a specific type of investment company which is normally established under a particular Act. The funds are raised from the large number of investors through selling of units, and the persons to whom the units are sold are called the unitholders. The holders of these units are the owners of the trust who have a real interest in securities, which constitute the trust fund. Normally, a unit trust is established as an open-end investment company. Unit Trust of India is an example for this.

Thus, the investment companies are important participants in the capital markets. They mobilise funds from many investors and channelise the same for productive purpose through financial markets.

- iv) **Insurance Companies:** Insurance companies have emerged as prominent participants in the capital markets because of the availability of huge funds at their disposal for investment purpose. These companies can be classified into various categories such as life insurance companies, general insurance companies, marine insurance companies which cover risk arising from fire, accidents, natural calamities for human lives, vehicles, houses, durable goods, fixed assets, etc. Among these life insurance companies are dominant due to their large size and protection from state.

The major source of funds of these companies is premium received from the policy holders. Being the custodians of policy holder's savings, the responsibility of these companies to the public is very high. Hence the investment policy is usually different from that of other institutions. The major portion of the fund is normally invested in Government and Semi-Government securities, fixed income securities of public sector units and other corporate sector units. Apart from life insurance companies, general companies which are in insurance business of fire, marine and others also have huge investible funds to employ in the business sector.

In brief, insurance companies recently have become an important constituent of capital markets all over the world.

- v) **Development Banks:** Development banks which came into existence after the second world war are now most active participant in the capital markets all over the world. In India, some major development banks are: Industrial Finance Corporation of India (IFCI), State Financial Corporations (SFCs), State Industrial Development Corporations (SIDCs), Industrial Reconstruction Bank of India (IRBI). IDBI and ICICI which were originally started as developmental banks got converted themselves into universal banks to face the challenges in the liberalised environment.
- vi) **Pension Funds:** Pension funds and retirement plans of all types have become important investors and participants in the capital markets. In developed countries, private pension plans or corporate pension funds have become major constituent of the capital market largely in the second half of the twentieth century. In a pension plan, pension holders are provided with a fixed amount in particular currency each month, often calculated as a multiple of the number of years worked in that organisation. It has been observed that assets in pension funds grow over long period because most of the employees who come under a plan are several years from retirement.
- vii) **Private Sector Finance Companies:** These companies collect funds from the people through shares, debentures, fixed deposits and short-term loans from banks and other corporate units. Sometimes, a huge fund

is also raised through inter-corporate deposits. Besides, they also provide short term business credit to the business firms and professionals. Thus, these finance companies have to compete with commercial banks and other financial institutions which provide such loans.

Thus, these finance companies play a significant role in capital market fulfilling financial needs of specific section of the society. Further, they borrow in both money market and capital market, so they create a link between these markets and relationship between long term and short-term interest rates.

Activity 8.4

- a) List down the activities of the Commercial Banks in a Capital Market.

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- b) Discuss the role of the Discount and Finance House of India (DFHI).

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8.5 SUMMARY

A market is a place where buyers and sellers meet to exchange goods, services, or even financial products/instruments for a consideration. Markets can also be defined as channels through which buyers and sellers exchange goods, services, and resources. The present-day markets gradually evolved over several centuries. In this unit we have discussed in detail about the Financial Markets.

Financial markets facilitate trading in financial assets. Since financial assets are not consumed, what is bought and sold is their use for a particular period. There are many agencies which are participating in the financial market operations and are facilitating the process of transfer of funds from surplus units to deficit units. These participants of the financial markets, that facilitate the smooth flow of funds from surplus units to deficit units in both the money markets and capital markets have been elaborately discussed.

The capital markets involve raising finance through issue of publicly traded financial instruments in equity and debt that can be bought and sold at any time. For facilitating this framework, financial intermediaries play a very important role. The capital markets include money markets, debt markets and

equity markets, savings and loan markets, retirement/pension fund market. Other markets include commodity and currency markets and more sophisticated markets such as the derivatives markets. The characteristics of currency and commodity markets, derivatives markets including the concept of OTC and Exchange traded derivatives markets has been discussed.

8.6 KEY WORDS

Financial Market: A Financial Market is a system of processes and functions that are usually regulated by means of rules and guidelines for enabling participants to transact in financial products and instruments.

Money Market: Money market is the place or mechanism where short term funds are raised. These funds are obtained at the varying rates depending upon the sources of funds, the credit standing of the borrowers, maturity period, etc.

Capital Market: Markets that facilitate the sale of long-term securities by deficit units to surplus units are referred to as capital markets and the securities traded in these markets are known as capital market securities.

Primary Market: Primary Market is a segment of capital markets that deals with the issuance of new securities.

Secondary Market: It is the segment of Capital Markets relating to trading of already-issued (outstanding) securities.

Investment companies: These are such institutions which collect the funds from the people through a specific financial instrument, i.e., unit, share, debenture, etc., and then invest these pooled funds in the suitable securities depending upon the objective of that scheme.

8.7 SELF ASSESSMENT QUESTIONS

1. What do you mean by 'market'? Discuss the evolution of financial markets.
2. What are the different types of markets in the contemporary context?
3. What is the meaning and significance of money markets?
4. What are the functions of capital markets?
5. What is equity market? Discuss the reforms initiated in the equity markets?
6. What is debt market? Explain the components of the Indian Debt market.
7. What is foreign exchange market? Which are the major currencies traded?

8.8 FURTHER READINGS

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UNIT 9 SOURCES OF FINANCE

Objectives:

After studying this Unit you should be able to:

- Appreciate the importance of different Sources of Finance
- Understand classification of Sources of Finance under various categories
- Discuss the advantages and disadvantages of different Sources of Finance
- Explain the ways in which funds can be raised for the smooth and effective functioning of an enterprise.

Structure:

- 9.1 Introduction
- 9.2 Classification of Sources of Finance
- 9.3 Long Term Sources
 - 9.3.1 Equity Capital
 - 9.3.2 Preference Shares
 - 9.3.3 Debentures
 - 9.3.4 Retained Earnings
 - 9.3.5 Venture Capital
 - 9.3.6 Leasing
 - 9.3.7 Hire Purchase
- 9.4 Short Term Sources of Finance
 - 9.4.1 Trade Credit
 - 9.4.2 Commercial Paper
 - 9.4.3 Factoring
 - 9.4.4 Public Deposits
- 9.5 Financing through Financial Institutions
 - 9.5.1 Term Loan
 - 9.5.2 Bank Credit
 - 9.5.3 Bills Discounting
 - 9.5.4 Letter of Credit
- 9.6 Emerging Sources of Finance
 - 9.6.1 Asset Securitisation
 - 9.6.2 Angel Financing
 - 9.6.3 Crowd Funding
 - 9.6.4 Small Business Credit Cards
- 9.7 Summary
- 9.8 Key Words
- 9.9 Self Assessment Questions
- 9.10 Further Readings

9.1 INTRODUCTION

Financial market as discussed in the previous unit is a system of processes and functions that are usually regulated by rules and guidelines for enabling participants to transact in financial products and instruments. Traditionally, transactions used to take place only in unorganized market places. These unorganized market places were not subject to specific rule or regulation. When countries developed and as economies evolved, the need to regulate markets to remove distortions and to facilitate free flow of funds gave rise to regulatory bodies. The concept of organized markets evolved to entrust confidence among market participants.

The traditional organized financial markets in India are:

- i) Money Markets - for maturity of less than or equal to one year
- ii) Capital Markets - for maturity of more than one year. The capital markets comprises:
 - a) Equity markets
 - b) Debt market

The capital markets comprise of the equity markets and debt market. New equity stock offering is issued in the primary market. The corporates issue new equity stock for raising capital towards expansion of business activities. The stocks that are issued are subsequently listed on the Indian equity exchanges - NSE, BSE, and other regional exchanges - which comprises the secondary markets. The components of the Indian Financial Markets include not only the capital markets and money markets, but also the foreign exchange markets, Insurance, Pension Fund markets, Loan Markets and Savings and Investment markets.

The funds are required basically for two reasons: *one* to acquire fixed assets and the *other* to run the operations of the business. It is imperative for any organization to raise funds for the smooth, and effective functioning of the business. Arranging for the required funds for each department of the business is highly complex which requires several decisions to be made. Business usually needs two kinds of finances; the short term and the long term. There are several factors which will be affecting the requirement of fund for a business. The quantum of finance needed may depend on several factors such as; the nature of business, scale of operations, business cycle, asset's structure, etc. There are different sources for raising capital for different purposes.

In the previous unit we have discussed as to how different financial institutions and markets facilitate the organizations in raising funds from the market. Here we will be discussing some of these instruments/ sources that these markets and institutions provide us to finance the business.

9.2 CLASSIFICATION OF SOURCES OF FINANCE

The sources of finance are classified based on period as long, medium and short-term finance. As per the ownership and control it is classified as Owned

funds and borrowed funds. Depending upon the source of generating this fund it is either internal or external. Each of these sources is further classified as indicated in the Table-9.1 given below:

Time	Ownership	Source of Generation
• Long Term • Equity • Preference Shares • Internal Accruals • Debenture Bonds • Term Loans • Venture Funding • Asset Securitisation • International Financing • Medium Term • Debenture Bonds • Medium Term Loans from Banks/ Financial Institutions / Government • Lease Finance • Hire Purchase • Short Term • Trade Credit • Short Term Loans • Fixed deposit for less than a year • Advances received from Customers • Creditors • Payables • Factoring Services • Bill Discounting	• Owned • Equity Capital • Preference Capital • Retained Earnings • Convertible Debentures • Venture Fund/ Private Equity • Borrowed • Loans from Banks or Financial Institutions • Debentures	• Internal • Equity Capital • Preference Capital • Retained Earnings / Retained Profits • Convertible Debentures • Venture Fund or Private Equity • External • Reduction of Working Capital • Sale of assets etc. • Bonds

Table-9.1: Various Sources of Finance/ Financing

We will discuss some of these sources of finance in the subsequent section.

Activity 9.1

Try to identify two or three sources of finance that are applicable to any firm of your choice.

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9.3 LONG TERM SOURCES

The long-term finance is raised when the need for funds is for more than five to ten years. Long-term finance is required for acquisition of fixed assets having a life of more than one year or investments which have long-term

impact on the earnings of the company. For instance, if a firm wants to buy a patent or brand, which in turn contributes to the sales of the firm for a long-term, it requires long-term funds for such acquisition. Some of the long-term sources are equity, debt, asset securitization, venture capital, etc. A company can raise funds through capital market by issuing financial securities such as shares and debentures. A financial security is a legal document that represents a claim on the issuer. The corporate securities are broadly classified into ownership securities and creditorship securities. There are also securities known as hybrid securities having the mix of the features of ownership securities as well as creditorship securities. Depending upon the market conditions and financing strategies, the issuers adopt different methods.

9.3.1 Equity Capital

Equity share capital is one of the most important sources of raising capital. Equity capital represents the owner's equity, which is prerequisite to start a company. Its holders are residual owners, who have unrestricted claim on income and assets and who enjoy all the voting power in the company and thus can control the affairs of the company. It is prerequisite to the creation of a company. From the corporate perspective, there is no fixed obligation of funds to be paid to the equity shareholders. It is perpetual in nature. If the shareholders require funds, they can sell the shares in the secondary markets. In exceptional cases a company may buyback the shares. A company may buyback its shares without shareholders' resolution, to the extent of 10% of its paid-up equity capital and reserves. However, if a company intends to buyback its shares to the extent of 25% of its paid-up capital and reserves, then the same must be approved by Shareholder's Resolution. Section 68, 69, and 70 of the Companies Act, 2013 along with rule 17 of the Companies (Share Capital and Debentures) Amendment Rules 2016, regulate the process of share buyback for unlisted companies. The buyback of shares listed on recognised stock exchanges is regulated by SEBI regulation.

Equity share capital is also known as risk capital as the equity shareholders are exposed to greater amounts of risk, but at the same time they have greater opportunities for getting higher returns. The obligations of companies towards their shareholders are to distribute the income left after paying the claims of all other investors (e.g.: debt) among the equity shareholders. The equity shares also give shareholders a residual claim on the assets of the company in case of liquidation. The advantages and disadvantages of equity shares are as follows:

Advantages:

- i) The equity shares are not repayable to the shareholders and thus it is a permanent capital for the company unless the company opts to return it through buying its own shares.
- ii) The debt capacity of a company depends on its equity including reserves. Hence, raising of capital through equity enhances the company's debt capacity.

- iii) The company has no legal obligation to service the equity by paying a certain rate of dividend, unlike the debt for which interest is payable. Therefore, the firm can conserve the cash when it faces the shortages and pay when its earnings are adequate to do so.

Disadvantages:

- i) Among the alternative sources of capital, the equity capital cost is high, because of higher risk, flotation costs, non-deductibility of dividend for tax purposes, etc.
- ii) Investors perceive the equity shares as highly risky due to residual claim on assets, uncertainty of dividend and capital gains. Therefore, the company should offer higher returns to attract equity capital.
- iii) Addition to equity capital may not raise profits immediately, but will dilute the earnings per share, adversely affect the value of the company.
- iv) In raising of capital by offering equity shares will reduce the power of promoters control, unless they contribute proportionately, or opt for non-voting shares which are costlier than ordinary equity shares.

9.3.2 Preference Shares

The preference shares are called quasi-equity having characteristic of both equity and debt. These shareholders get dividend, which is fixed and paid before anything is paid to equity holders, but they do not have voting rights. In case a company fails to pay the stated dividends, they may acquire the voting rights in certain circumstances. The investors can claim stake over the residual assets, at the time of liquidation of the company before the equity holders and after the debt holders. They behave like debt instruments because they carry fixed dividend rates. They behave like equity instruments because they offer the dividend to the shareholders without any obligation on the company in case of liquidation.

The advantages and disadvantages of preference share capital are as follows:

Advantages:

- i) The dividend rate is fixed, providing a constant rate of income to the investors. They do not present a major control or ownership problem if the dividend amount is being paid to them. In certain specific cases preference share holders have voting rights, but they do not pose any major control problem for the promoters.
- ii) The other advantage of preference shares is that of cumulative dividends. Cumulative preference shares carry accumulated unpaid dividends year to year till the company can pay all the dividends including the arrears at a stated rate.
- iii) It helps to maintain the status quo in the control of the equity stock and reduce the cost of capital as the preferred stock carries lower rate of dividends as compared to other debt securities, like debentures which usually carry higher rates of interest.
- iv) The preference shareholders may have a right to share the surplus profits

by way of additional dividend and the right to share in the surplus assets in the event of winding-up after all kinds of capital have been repaid.

- v) The company does not face liquidation or any other legal proceedings, if it fails to pay preference dividends, as there is no such legal compulsion to pay preference dividends.

Disadvantages:

- i) The preference shareholders do not have voting rights, so there is no direct control over the management of the company.
- ii) They get only a fixed rate of dividend, even if the company enjoys more profits.
- iii) The cumulative preference shares become a permanent burden so far as the payment of dividend is concerned. The company is under an obligation to pay the dividends for the unprofitable periods also.
- iv) In case, if the company earns returns less than the cost of preference share capital, it may result in decrease in earnings per share (EPS) for the equity shareholders.
- v) For tax calculation dividend on preference shares is not a deductible expense, but interest is a deductible expense.

9.3.3 Debentures

Debentures are one of the principal sources of funds to meet long-term financial needs of companies. Though there is no specific definition of debenture, according to the Companies Act 1956, the word debenture includes debenture stock, bonds, and any other securities of a company. Thus, a debenture is widely understood as a document issued by a company as evidence of debt to the holder, usually arising out of loan and mostly secured by charge.

The debentures are instruments for raising debt finance and the debenture holders are the creditors of the company. Debt provides the capital to a company with fixed cost liability (Interest to be paid annually/semi-annually). The debenture holders get interest paid as the payment of interest is an obligation on the company. But they do not have voting rights which equity shareholders have. They have claim over the assets of the company before the equity holders. The obligations of the company issuing debentures include establishing a Trustee through a trust deed. The trustee, usually a bank or financial institution is supposed to ensure that the company fulfils its contractual obligations. Secondly, debentures are backed by mortgages/charges on the immovable properties of the companies. These debentures are redeemable in nature with maturity of more than 18 months, for which the company must create a Debenture Redemption Reserve.

The following are the advantages and disadvantages of debentures:

Advantages:

- i) It is one of the long-term sources of finance having a maturity period longer than the other sources of finance.
- ii) The debenture holders are only creditors of the company and hence they cannot interfere with the company affairs as they do not have voting rights.
- iii) Further, the debenture holders are entitled to interest at a fixed rate, which is usually lower than other sources of long-term finance.
- iv) The cost of debentures is usually low, as the interest payments on debentures are tax deductible expenses. Thus, it helps to reduce the tax burden of the company.
- v) In case of liquidation of the company, the debenture holders have priority over equity shareholders in the distribution of available funds of the company.

Disadvantages:

- i) The interest on debentures is payable even if the company is unable to earn profit and hence, it may not be suitable to those companies whose earnings fluctuate considerably.
- ii) Secured debentures restrict the company from raising further finance through debentures, as the assets are already mortgaged to the debenture holders.
- iii) The debenture holders can initiate the legal proceedings against the company, if it defaults on its interest payment or principal when they become due.

9.3.4 Retained Earnings

The companies can raise funds from internal sources, through the retained earnings, which are ploughing back of profits for future expansion or diversification activities. Some of the advantages and disadvantages of this source of finance are:

Advantages:

- i) This is the lowest cost of fund and does not involve any flotation cost as required for raising funds while issuing different types of securities.
- ii) If the company uses retained earnings, it is not under any obligation for payment of dividend or interest on retained earnings.
- iii) As there is no implicit cost of retained earnings, the value of share will increase.
- iv) These funds being internally generated, there is a greater degree of operational freedom and flexibility.

Disadvantages:

- i) Excessive use of retained earnings may lead to monopolistic attitude of the company.

- ii) If retained earnings are used more it may lead to over capitalization, which is symbolic for inefficient working of an organization.
- iii) By manipulating the value of shares in the stock market the management can misuse the retained earnings.
- iv) This source of funds is uncertain, as the profits of the business are not certain.

9.3.5 Venture Capital

Venture capital is usually in the form of equity or quasi-equity instruments in a new company set-up to commercialise a novel idea. It is investment at the early-stage in case of high-growth projects, which have high-risk with the potential high returns over a period ranging from three to seven years. The risk factor being high, the probability of failure is also high. The venture capital investment is “hands-on” investment, where the investor mentors and advises the promoters of the business in which the investment has been made. The venture capitalist is an investor, who guides the project through its different stages of growth by identifying avoidable pitfalls and directs the business along with the possible avenues of growth. The returns to the venture capitalist are from the handful of the projects, which succeed.

The venture capitalist is a partner, who brings more money to the project. Many projects, which find it difficult to raise funds from banks and other financial institutions, approach venture capitalists for assistance. The venture capitalists conduct a preliminary project appraisal, which includes verification of whether it is in their investment of the business. Further, venture capital organization provides value addition in the form of management advice and contribution of overall strategy. The relatively high risk will normally be compensated by the possibility of high return in the form of capital gains in the medium term.

The main features that distinguish venture capital from other sources of capital market are as follows:

- i) Venture capital is a form of equity capital for relatively new companies, which find it too premature to approach the capital market to raise funds. However, the basic objective of a venture capital fund is to earn capital gain, which usually will be higher than interest at the time of exit.
- ii) The transfer of existing shares from other shareholders can not be considered as venture capital investment. The funding should be for new project or for rapid growth of the business, with cash transferring from the fund to the company.
- iii) All the projects financed by the venture capitalists will not be successful. However, some of the ventures yield very high return to more than compensate for the losses on others.

Thus, the venture capital firms, fund both early and later stage financing requirements of a firm, balancing between risk and profitability. This is an ideal source of capital for promoters having very good technical and management skills, with limited financial resources

Activity-9.2

Identify the advantages of using venture capital fund for financing the business.

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9.3.6 Leasing

Leasing provides an alternate method of financing the business to acquire assets. Instead of borrowing for acquiring assets, it is possible for firms to acquire the assets on lease. A lease is a contract whereby the owner of an asset (the lessor) grants to another person (the lessee) exclusive right to use the asset for an agreed period, in return for the payment of a rent (called lease rental). The capital assets, like land, buildings, equipment, machinery, vehicles are the usual assets which are generally acquired on lease basis. The lessor remains the owner of the asset, but the possession and economic use of the asset is vested in the lessee.

The advantages and disadvantages of using leasing as a source of finance are as follows:

Advantages:

There are several benefits derived by the lessee by acquiring the assets on lease basis, as compared to buying the same, which are discussed as under:

- i) If the capital asset is needed for a short period say a year or two, leasing is a very convenient and appropriate method of acquiring. It dispenses with the formalities and expenses incurred in purchasing the asset and selling it soon after the need is over.
- ii) In case of owning an asset, the firm bears the risk of the asset becoming obsolete. In the present age of technological innovations, risks in owning an asset with outdated and old technology cannot be ignored. Leasing provides a shield against all these hazards by shifting the risk of obsolescence of equipment to the lessor.
- iii) Under operating or full-service lease, the lessee avails of the maintenance and other services provided by the lessor, who is well equipped, qualified, and experienced to provide such services efficiently. Of course, the lessee pays for such services in the form of higher rentals.
- iv) Many leasing companies specialise in leasing a few types of equipment, machines, or vehicles only. They can easily bargain with the suppliers/manufacturers, etc., and acquire the assets at better prices and can economise in other administrative expenses also. The lessee may get a concession in lease rent based on the economies derived by the lessor.
- v) When an asset is acquired on lease basis, lease rentals are shown as an

expense in the firm's profit and loss account. Neither the leased asset nor the liability under the lease agreement is shown in the Balance Sheet. Hence the debt-equity ratio remains unaffected as compared to a firm which buys the asset with borrowed funds.

Disadvantages:

- i) The lessee undertakes to pay to lessor regularly lease rental, as consideration for the use of the goods. So, the cost of this is higher as compared to other sources.
- ii) The goods must be returned to the lessor exactly in the same form, after the lease period is over. The lessee cannot make any considerable changes to the asset or property as he is not the owner.
- iii) The lessor, after handing over possession of the leased asset, remains owner of the asset throughout the lease period and even thereafter.
- iv) After the lease period is over, the lessee will not get the ownership over the leased asset, though quite a good amount is paid over the years in the form of lease rentals to the lessor.

9.3.7 Hire Purchase

Hire purchase is another method of acquiring a capital asset for use, without paying its price immediately. Under hire purchase arrangement goods are let on hire. The hirer (user) is allowed to pay the purchase price in instalments and enjoys an option to purchase the goods after all the instalments have been paid. Thus, the ownership in the asset is passed on to the hirer on payment of the last instalment. The amount and number of instalments is fixed at the time of delivering the asset to the hirer. If the hirer makes default in making payment of any instalment, the seller is entitled to recover the asset from the hirer. The hirer may, on his own also, return the asset to the hiree without any commitment to pay the remaining instalments. Thus, the property in the asset remains vested in the seller (hiree) till the right of purchase is exercised by the hirer after making payment of all the instalments.

9.4 SHORT TERM SOURCES OF FINANCE

Firms also raise short term funds from banks and other investors. Some of the methods used to raise short term funds used by firms are as follows:

9.4.1 Trade Credit

Trade credit is used by companies as a short-term source of financing. It is a credit facility extended by one trader to another for the purchase of goods and services. Immediate payment is not required in this case. The payables constitute a current or short-term liability representing the buyer's obligation to pay a certain amount on a date after the purchase for value of goods or services received. They are short-term deferments of cash payments that the buyer of goods and services is allowed by the seller.

The trade credit is extended in connection with goods purchased for resale or

for processing and resale, and hence excludes consumer credit provided to individuals for purchasing goods for ultimate use and instalment credit provided for purchase of equipment for production purposes. Trade credits or payables serve as non-interest-bearing source of funds in most cases. They provide a spontaneous source of capital that flows in naturally during business in keeping with established commercial practices or formal understandings.

Advantages:

- i) Trade credit could be obtained readily, without extended procedural formalities. During periods of credit crunch or paucity of working capital, trade credit from large suppliers can be a boon to small buyers.
- ii) Where the suppliers have the advantage of high gross margins on their products, they would be able to assume greater risks and extend more liberal credit.
- iii) In trade credit, there is no rigidity in the matter of repayment on scheduled dates. It serves as an extendable, convenient source of unsecured credit.
- iv) Even as the current dues are paid, fresh credit flows in, as further purchases are made. With a steady credit term and the expectation of continuous circulation of trade credit-backing up repeat purchases, trade credit does in effect, operate as long-term source of finance.

Disadvantages:

- i) Easy availability of credit may induce a firm to indulge in overtrading, which may increase the risks of the firm.
- ii) The funds generated using trade credit are limited compared to that of others.
- iii) Sometimes it may be a costly source of funding as compared to other sources.

9.4.2 Commercial Paper

Companies with good credit rating can raise money directly from the market by issuing commercial papers. It is an unsecured instrument through which high net worth corporates borrow funds from any person, corporate or unincorporated body. It is issued in the form of usance promissory note, which is freely transferable by endorsement and delivery. Its minimum period of maturity should be 15 days and maximum period is less than a year, it is issued at a discount to face value.

The commercial papers are unsecured notes but negotiable and hence liquid. Instruments like commercial papers enable both lenders and borrowers to move out of the relationship in a short period of time. Since lender and borrower meet directly, the cost of commercial paper borrowing will be lesser than working capital loan. Many banks and cash rich companies participate in commercial papers, which are issued by high-quality companies. Since they are liquid, even banks are willing to invest money in commercial papers.

9.4.3 Factoring

The Factoring is essentially a management service designed to help firms better manage their receivables. It is in fact, a way of off-loading a firm's receivables and credit management on to someone else - in this case, the Factoring Agency or the Factor. Factoring involves an outright sale of the receivables of a firm to another firm specialising in the management of trade credit, called the Factor.

Under a typical factoring arrangement, a Factor collects the accounts on the due dates, effects payments to its client firm on these days and assumes the credit risks associated with the collection of the accounts. For rendering these services, the Factor charges a fee which is usually expressed as a percentage of the total value of the receivables factored. Thus, factoring is an alternative to in-house management of receivables. Depending upon the inherent requirements of the clients, the terms of Factoring contract vary, but broadly speaking Factoring service can be classified as:

- a) **Non-recourse Factoring:** In Non-recourse factoring, the Factor assumes the risk of the debts going "bad". The Factor cannot call upon its client-firm whose debts it has purchased to make good the loss in case of default in payment by the counter party. However, the Factor can insist on payment from its client if a part of the receivables turns bad for any reason other than financial insolvency.
- b) **Recourse Factoring:** In recourse factoring, the Factoring firm can insist upon the firm whose receivables were purchased to make good any of the receivables that prove to be bad and unrealisable. However, the risk of bad debt is not transferred to the factor.

Many foreign and private banks have started providing the Factoring services. However, there are certain advantages as well as disadvantages of using Factoring as discussed below:

Advantages:

- i) Under the Factoring arrangement the client receives pre-payment upto 80-90 percent of the invoice value immediately and the balance amount after the maturity period. This helps the client to improve cash flow position which helps to have better flexibility in managing working capital funds in an efficient and effective manner.
- ii) It reduces administrative cost and time, as a result of this, the company can spare substantial time for improving the quality of production and tapping new business opportunities.
- iii) When without recourse factoring arrangement is made, the client can eliminate the losses on account of bad debts. This will help in concentrating more production and sales. Thus, it will result in increase in sales, increase in business and increase in profit.
- iv) The client can avail advisory services from the Factor by virtue of his expertise and experience in the areas of Finance and marketing. This will help them to improve efficiency and productivity of its organization.

The above mentioned benefits will accrue to the client provided he

develops a better business relationship with the Factor, and both have mutual trust in each other.

Disadvantages:

- i) Image of the company may suffer as engaging a Factoring Agency is not considered a good sign of efficient management.
- ii) Factoring may not be of much use where companies or agents have one-time sales with the customers.
- iii) Factoring increases cost of finance and thus cost of running the business.
- iv) If the client has cheaper means of finance and credit (where goods are sold against advance payment), Factoring may not be useful.

9.4.4 Public Deposits

According to the Companies Act, 2013, all types of money received by a company except the contribution to capital would fall in the category of deposits. Fixed deposits which are also known as public deposits have become attractive for companies as well as investors. For the companies, public deposits are easy form of fund mobilization without mortgaging assets. For the investors, public deposits provide a simple avenue for investment in good and popular companies at a better rate of interest without many formalities as involved in the case of shares and debentures. However, the public deposits being unsecured, the repayment of deposits and regular payment of interest are subject to a lot of uncertainty. By presenting false information some companies manage to collect large deposits from the gullible public and fail to honour commitments on payments, despite many regulatory provisions, as contained in the Companies Act and the Companies (Acceptance of Deposits) Rules, 1975.

9.5 FINANCING THROUGH FINANCIAL INSTITUTIONS

A company can also source long- and medium-term loans from financial institutions, like the Industrial Finance Corporation of India (IFCI), State level Industrial Development Corporations, etc. These financial institutions can grant loans for a maximum period of 25 years against approved schemes or projects. Loans agreed to be sanctioned must be covered by securities by way of mortgage of the company's property or assignment of stocks, shares, gold, etc. The corporate also has the option of sourcing medium-term loans from commercial banks against the security of properties and assets. This method of financing does not require any legal formality except that of creating a mortgage on the assets.

Following are some of the methods of Financing by Financial Institutions:

9.5.1 Term Loan

The term loans are granted for medium and long terms, generally above 3 years and are meant for purchase of capital assets for the establishment of new units and for expansion or diversification of an existing unit. At the time of setting up of a new industrial unit, term loans constitute a part of the

project finance which the entrepreneurs are required to raise from different sources. These loans are usually secured by the tangible assets like land, building, plant, and machinery etc. Now, the banks have the discretion to sanction term loans to all projects within the overall ceiling of the prudential exposure norms prescribed by the Reserve Bank of India. The period of term loans will also be decided by banks themselves. Though term loans are essentially meant for meeting the project cost, some part of project cost includes margin for working capital, This means a part of term loans essentially goes to meet the needs of working capital.

9.5.2 Bank Credit

Banks including the Development Finance Institutions have become chief source of funds to the corporate sector. In other words, the industrial credit is a major revenue earner to the banking sector as other types of credit like agricultural credit are subject to many restrictive conditions and regulations of RBI and therefore, the margins on such credits are very thin. The banks extend credit to industries and commercial establishments at varying rates of interest depending upon the credit worthiness of the borrower as well as period of loan. The proportion of bank credit in the total funds of the companies is very high in many a case. The major advantage for the companies in the bank credit is that it is a flexible source of financing, and it is relatively easy to mobilize funds through this source. Some of the forms of Bank credits are:

Overdrafts: This facility is allowed to the current account holders for a short period. Under this facility, the current account holder is permitted by the banker to draw from his account more than what stands to his credit. The excess amount drawn by him is deemed as an advance taken from the bank. Interest on the exact amount overdrawn by the accountholder is charged for the period of actual utilisation. The banker may grant such an advance either based on collateral security or on the personal security of the borrower. Overdraft facility is granted by a bank on an application made by the borrower. He is also required to sign a promissory note. Therefore, the customer is allowed the amount, upto the sanctioned limit of overdraft as and when he needs it. He is permitted to repay the loan as per his convenience and ability to do so.

Cash Credit: Cash credit accounts for the major portion of bank credit in India. The banker prescribes a limit, called the cash credit limit, upto which the customer-borrower is permitted to borrow against the security of tangible assets or guarantees. After considering various aspects of the working of the borrowing firm, i.e., production, sales, inventory levels, past utilisation of such limit, etc., the banker fixes the cash credit limit. The borrower is required to provide security of tangible assets. A charge is created on the movable assets of the borrower in favour of the banker. On repayment of the borrowed amount in full or in part by the borrower, security is released to him in the same proportion in which the amount is refunded. However, banker charges interest on the actual amount utilised by him and for the actual period of utilisation.

Loans: Loan is a definite amount lent at a time for a specific period and a definite purpose. It is withdrawn by the borrower once and interest is payable for the entire period for which it is granted. It may be repayable in instalments or in lump sum. If the borrower needs funds again, or wants to renew an existing loan, a fresh proposal is placed before the banker. The banker will make a fresh decision depending upon the availability of cash resources. Even if the full loan amount is not utilised the borrower has to pay the full interest.

9.5.3 Bills Discounting

The bill discounting is an important source of financing trade and business. Under this form of financing, seller of the goods draws a bill of exchange on the buyer (who accepts and returns the same to the drawer). Subsequently the seller of the goods discounts the bill of exchange with bank or finance company and avail the finance accordingly. Only those bills which arise out of genuine trade transactions are considered by the banks and finance companies for discounting purpose.

Parties to a Bill of Exchange are as follows:

- i) The **drawer** draws the bill and ensures that the bill is accepted and paid according to its tenor. The drawer promises to compensate the holder or any endorser of the bill if it is dishonoured.
- ii) The **drawee** is a person on whom the bill is drawn, and the drawee assumes legal obligation to pay the bill, as it shows assent by signing across the bill for payment at maturity.
- iii) The **payee** is a person to whom or to whose order the bill is payable.
- iv) The **endorser** could be the payee or any endorsee who signs the bill on negotiation. If the bill is negotiated to several persons who signs it in turn becomes an endorser. The endorser is liable as a party to the bill.

If the bill of exchange is not endorsed, then drawer and payee will be the same person.

Advantages:

The advantages of using bill discounting as a source for financing the business are:

- i) Banks usually discount bills at a rate lower than the rate charged for cash credit. In view of this, drawer of the bill can reduce its cost of funds by raising the funds through discounting of bills with banks.
- ii) Bills seem to have certainty of payment on due dates, and this helps to have efficient working capital management for the drawer. It also leads to greater financial discipline as bills are discounted only against genuine trade transactions as compared with bank overdraft facilities.
- iii) The banker is having no risk in lending, as providing finance against bill, the bank can ensure safety of funds lent. A bill is a legal negotiable instrument with the signatures of two concerned parties, enforcement of

a claim is easier.

- iv) With recourse to two parties banker face a lower credit risk. In other words, if the acceptor of the bill fails to make payment on the due date the bank can claim the whole amount from the drawer of the bill.
- v) As a security, the value of a bill is not subject to fluctuations which are found in case of values of tangible goods and financial securities. The amount payable on account of a bill is fixed and the acceptor is liable for the whole amount.

Disadvantages:

- i) Financial institutions charge a fee, which becomes a cost to the company. Thus, the profit margin of the company may decrease.
- ii) Bill discounting does not provide any facility or assistance to recover the unpaid bills.

9.5.4 Letter of Credit

A Letter of Credit(L/C) is a written undertaking given by a bank on behalf of its customer, who is a buyer to the seller of goods, promising to pay a certain sum of money provided the seller complies with the terms and conditions given in the L/C. It is generally required when the seller of goods and services deals with unknown parties or otherwise feels the necessity to safeguard his interest.

The banker issuing the L/C commits to make payment of the amount mentioned therein to the seller of the goods, provided the latter supplies the specified goods within the specified period and comply with other terms and conditions. Thus, by issuing letter of credit on behalf of their customers, banks help them in buying goods on credit from sellers who are quite unknown to them. The banker issuing L/C undertakes an unconditional obligation upon himself and charge a fee for the same. The L/Cs may be revocable or irrevocable. In the latter case, the undertaking given by the banker can not be revoked or withdrawn

9.6 EMERGING SOURCES OF FINANCE

Technology has led to the development of newer means and ways of financing business, some of which are discussed below:

9.6.1 Asset Securitization

Securitization is fairly a simple process through which an asset (fixed or current) is converted into financial claim. In other words, it brings liquidity to an illiquid asset. The concept is very popular in housing finance. Let us explain the concept with a simple example. Suppose a housing finance company has Rs. 100 cr. During the first six months, it accepts the loan proposals and lent Rs. 100 cr. at an average interest rate of 10% and the duration of the loan is 15 years. Suppose the housing finance company gets

some more loan applications say for Rs. 20 cr. in seventh month. The company has to look for new source of finance to fund the new loan proposals since it has already invested the entire capital and converted them into illiquid long-term 15 years receivables.

Under securitization, an intermediary agency is created, which initially buys the illiquid asset and against that it issues securities, which are tradeable in the market through listing. Thus, it is also called asset-backed securities or mortgage-backed securities. The value of the securities is improved by taking credit rating and often through insurance cover. Some of the advantages and disadvantages of securitisation are:

Advantages:

- i) Securitization improves operating cycle of the capital in the sense the housing finance company can recycle the capital several times and finance more houses without borrowing on its book.
- ii) Every time when the cycle is completed, the firm receives profit.
- iii) On buying the existing loan, the lending company can assess the quality of loans through a credit rating agency and thus, reducing the risks considerably.
- iv) Normally, lending blocks the funds of lender for a long-term whereas an investment in securitized asset brings liquidity for the funds invested. So, it is a rare case of win-win situation for both the borrower and investors.

Disadvantages:

- i) The process of securitisation is very complicated and at times may be an expensive source of long-term finance.
- ii) It may hamper the ability of the business to raise funds in the future.
- iii) While taking back the assets and closing of the Special Purpose Vehicle (SPV), the costs could be substantially high.
- iv) The company may lose direct control over the assets securitized, which could reduce business value in the event of flotation.

While securitization as a concept was developed to help finance companies to convert their loans into liquid assets, it is now extensively used in several other business situations. By securitizing, the company sells the receivables to the intermediary agency, which collects the money and distributes to the holders of such securities. It is possible for companies producing commodities, where the demand is predictable, to raise long-term resources by securitizing their future receivables. The amount thus raised can be used to strengthen long-term or permanent working capital needs of the firms or invest in fixed assets to expand the capacity.

9.6.2 Angel Financing

A new start-up business can flourish only if it is backed by sufficient funds. Companies finance their businesses using own capital and borrowed funds.

There are individuals who invest in companies which are in their initial stages of development for equity ownership interest, known as Angel investors. These investors mostly lookout for the quality, passion, and integrity of those who are starting the business, market opportunity, clearly thought-out business plan, interesting technology, intellectual property, etc.

9.6.3 Crowd Funding

In today's time of social networking many new ways have emerged for raising funds, and crowd funding is one of them. It is an internet-based mechanism where start-ups looking for funds and the potential investors can transact. It is a practice of raising funds using multiple websites from multiple funders. This gives budding entrepreneurs an opportunity to raise funds for their business and for promoting products and services. A company desirous of raising funds needs to create its profile on the website giving details about the company, its products or services, the amount that is being raised, etc. Those who are interested in it donate funds usually in exchange of reward. The reward may be in form of a discount on the product or service being offered by the company or in the form of perks. The reward could also be in the form of equity or share in profits of the company. In reward-based campaign there is no burden on the company in terms of interest or principal repayments.

The technological platforms do not operate as financial intermediaries and hence are not involved in the investment process. The advantage of these platforms is that it provides a wider investor community to access opportunities of investing in start-ups with small amounts. It requires entrepreneurs to publicly disclose their business ideas and strategy which may harm start-up with innovative business models, as it could easily be copied. Here crowd investors may decide based on investment decisions made by others. Crowd investors have hardly any influence on the business and can wait for longer periods for getting back the invested capital.

9.6.4 Small Business Credit Cards

Business credit cards are just like the normal credit cards that are available. These cards are however provided to business owners, giving an easy access to revolving credit with a set credit limit to make purchases and withdrawals. It increases the purchasing power of the company, but interest is charged if the payment is not made in the billing cycle. It is a convenient and easily accessible source of short-term finance to meet the immediate needs of the business, thereby increasing the company's purchasing power. The advantages and disadvantages of using this source of finance are:

Advantages:

- i) New business owners, who do not possess a well-established credit history, can also qualify for revolving line of credit with these cards. It is convenient to get business card as compared to bank loan.
- ii) The small business credit cards provide a financial cushion to the owners. In case of delay in accounts receivable or sales are low, the cash

deficit of the business could be met through these cards.

- iii) Most of the business purchases from vendors, contractors and suppliers are made online. These business credit cards help in making these online transactions, which also provide rewards and cash back incentive to the owners.
- iv) By making repayments on time, business owners can build-up a positive credit report for their company. It could help in qualifying for a loan at considerably lower interest rate.

Disadvantages:

- i) All the convenience and ease come with a price in the form of higher interest rates, which could add up quickly if the repayments are not made in full in each month.
- ii) In most of the cases a personal liability agreement is made to repay debt. Default in payment could lead to a negative credit report.
- iii) There is threat of cards or card information being stolen by vendors, contractors or those moving in the office premises. One needs to be vigilant that employees using these cards do not use it for personal purchases and take adequate precautions while making online transactions to avoid these cards being hacked.
- iv) The providers of business credit cards can reset the interest rates depending on the past performance and management of account.

9.7 SUMMARY

In this unit, the different sources of funds, which can be used by the firms for various requirements of the businesses, are discussed. These sources are usually classified in different categories based on time, ownership, and source of their generation. The advantages and disadvantages of various sources of funds have also been discussed.

Capital market plays a very important role in the mobilization of funds for Investment. The capital market has experienced metamorphic changes over the last few years. The competition in the market has become so intense necessitating the introduction of several kinds of securities. The corporates in India mostly raise their funds through capital market by issuing equity shares, preference shares, debentures, bonds and secured premium notes.

As discussed in the unit venture capital is most suitable for high-risk projects, where venture capitalist is willing to put equity and assumes risk provided the project has a scope for high return. The commercial paper, factoring, bill discounting, etc., along with the prominent emerging sources through which firms can raise funds have also been covered elaborately. Each method has got its own distinctive features and depending upon the market conditions and financing strategies the company may adopt different methods of financing the business.

9.8 KEY WORDS

Venture Capital: Venture capital is a form of equity financing where capital is invested in exchange for equity, typically a minority stake, in a company that looks poised for significant growth.

Factoring: It is a financial service covering the financing and collection of accounts receivables in domestic as well as international trade.

Commercial Paper: Commercial paper is a short-term debt instrument issued by companies to raise funds generally for a period up to one year. It is an unsecured money market instrument in the form of a promissory note, which is freely transferable by endorsement and delivery.

Public Deposits: Public deposits are deposits of money accepted by companies in India from the public for specified period ranging between 3 months and 36 months. These deposits are accepted within the limit and subject to terms prescribed under the Companies (Acceptance of Deposits) Rule, 1975.

Leasing: A lease is a contract whereby the owner of an asset (the Lessor) grants to another person (the Lessee) exclusive right to use the asset for an agreed period of time, in return for the payment of a rent (called Lease Rental).

9.9 SELF ASSESSMENT QUESTIONS

1. Critically examine equity capital as a source of raising finance.
2. As a manager of a company, if you need funds to manage the working capital effectively which source you would prefer and why?
3. Discuss the advantages and disadvantages of using Debentures as a source of raising funds.
4. How is lease finance different from that of equity or debt finance?
5. Explain how Asset Securitization is considered as a source of finance? Discuss its advantages and disadvantages to the company.
6. Describe the kinds of Projects preferred by Venture Capitalist. What are the advantages of using venture capital funds, to a business?

9.10 FURTHER READINGS

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UNIT 10 CAPITAL STRUCTURE

Objectives

The objectives of this unit are to:

- Understand the importance of decisions regarding Capital Structure.
- Discuss the concept of an appropriate Capital Structure.
- Identify the factors that have bearing on determining the Capital Structure.

Structure

- 10.1 Introduction
- 10.2 Concept of Capital Structure
- 10.3 Features of an Appropriate Capital Structure
- 10.4 Determinants of Capital Structure
- 10.5 Summary
- 10.6 Key Words
- 10.7 Self Assessment Questions/Exercises
- 10.8 Further Readings

10.1 INTRODUCTION

Finance is a critical input for any organisation, since it is required for both working capital and long-term investment. The total funds used in a firm come from a variety of sources. The owners contribute a portion of the capital, while the rest is borrowed from individuals and institutions. While some funds are maintained in the firm indefinitely, such as share capital and reserves (owned funds), others are held for a long time, such as long-term borrowings or debentures, while yet others are short-term borrowings mostly used for working capital requirements. The total financial structure of the company is made up of the complete composition of all of these funds.

You are well aware that the requirement for short-term funds fluctuate a lot. As a result, the proportion of short-term financing is constantly changing. The composition of long-term funds, referred to as capital structure, is frequently governed by a set of rules. The **debt-to-equity ratio** and **dividend determination** are two other important parts of policy. The latter has an impact on the accumulation of retained earnings, which is a key component of long-term funds. Because permanent or long-term funds account for a significant amount of total funds and include long-term policy decisions, the term financial structure is frequently used to refer to a company's capital structure.

There are some long-term funding options that are commonly available to corporate organisations. Share capital and long-term debt, including debentures, are the key sources. The profit generated by operations can be

retained in the business or distributed as a dividend. A reinvestment of the owners' funds is the portion of profits retained in the firm. As a result, it is a long-term fund source. All of these sources combine to form the firm's capital structure.

10.2 CONCEPT OF CAPITAL STRUCTURE

The mix, or proportion, of different types of finance (debt and equity) to total capitalization is referred to as capital structure. It is a measure of a company's entire long-term investment. It includes funds raised by common and preferred stock, bonds, debentures, and term loans from a variety of financial institutions, among other things. Earned revenue and capital surpluses are also considered.

Capital Structure Planning

The construction of a suitable capital structure in the context of each firm's facts and circumstances is referred to as capital structure planning. Because of the possible impact on profitability and solvency, the decision on what type of capital structure a company should have is crucial. Small businesses frequently do not plan their capital structure. Without any explicit planning, the capital structure may develop in these businesses. These businesses may prosper in the short term, but they will encounter significant challenges sooner or later. The company's unplanned capital structure prevents it from making efficient use of its funds.

As a result, a company's capital structure should be planned in such a way that it maximises its benefits and allows it to react more quickly to changing situations. Rather than following any scientific procedure to determine an appropriate proportion of different types of capital that will reduce the cost of capital while increasing market value, a company can simply copy the capital structure of other similar companies or consult an institutional lender and follow its advice.

Theoretically, a firm should build its capital structure so that the market value of its shares is as high as possible. When the marginal cost of each source of funds is the same, the value will be maximised. In general, the debate over the best capital structure is purely theoretical. In actuality, determining an optimal capital structure is a difficult endeavor, and we must go beyond theory. As a result, there are likely to be major differences in capital structure between industries and across enterprises within the same industry. A company's capital structure selection is influenced by a number of things.

The judgement of the individual or group of individuals making the capital structure decision is critical. If the decision makers disagree about the importance of various criteria, two similar companies can have distinct capital structures. These variables are psychologically complicated and qualitative, and they do not always match the accepted theory. Since capital markets are not flawless, decisions need to be made with limited information and thus risk. You may have been interested in identifying some of the key aspects that drive capital structure planning in practice. However, before we

go into these details, let us have a look at the characteristics of a good capital structure in the next part.

10.3 FEATURES OF AN APPROPRIATE CAPITAL STRUCTURE

The capital structure is frequently designed with regular shareholders' interests in mind. Ordinary shareholders are the company's ultimate owners and have the power to choose the Directors of the company. The Finance Manager should try to maximise the long-term market price of equity shares while building a suitable capital structure for the organisation. In actuality, there would be a range of appropriate capital structures for most companies within an industry, with few changes in the market value of shares. For example, a corporation may operate in an industry with a debt-to-total-capital ratio of 60%. It is possible that shareholders, on average, do not mind if the company operates within a 15% range of the industry's typical capital structure. As a result, the optimum capital structure for the corporation is a debt-to-total capital ratio of 45 to 75 percent. Subject to other considerations, such as flexibility, solvency, and so on, the company's Management should strive to find a capital structure towards the top of this range to maximise the use of favourable leverage.

A sound appropriate capital structure should have the following features:

Profitability: Within the limits, the company's capital structure should be the most advantageous. The most effective use of leverage at the lowest possible cost should be pursued.

Solvency: Excessive debt puts a company's solvency in jeopardy. The debt should only be utilised sparingly.

Flexibility: The capital structure should be adaptable to changing circumstances. If a company's financial structure needs to be modified, it should be possible to do so with minimal expense and delay. The corporation should also be able to supply finances whenever it is needed to finance its profitable activities.

To put it another way, we need to approach capital structuring with caution from a solvency standpoint. The company's debt capacity, which is based on its ability to generate future cash flows, must not be surpassed. It should have adequate cash on hand to pay creditors' set charges (interest) on a regular basis as well as the principal payment upon maturity.

The characteristics listed above are typical of an appropriate capital structure. more special aspects may be reflected in a company's characteristics. Further, the importance placed on each of these characteristics may differ from one organisation to the next. For example, a company may place a higher value on flexibility than on maintaining control, which is another desirable attribute, while another company may place a higher value on solvency than on any other criteria. Further, if circumstances change, the relative relevance of these factors may shift.

10.4 DETERMINANTS OF CAPITAL STRUCTURE

When a firm is promoted, the capital structure must be decided. The initial capital structure should be properly planned. The company's Management should establish a target capital structure, and subsequent finance decisions should be made with the goal of achieving that capital structure. The Finance Department Management must deal with the current capital structure once a firm has been created and has been in operation for few years. The company may require capital to continue to fund its operations. When funds are needed, the Management assesses the advantages and disadvantages of various sources of financing and chooses the most favourable sources while keeping the intended capital structure in mind. As a result, the capital structure choice is a constant one that must be made anytime a company needs additional funding.

When deciding on a capital structure, the following factors should be considered:

i) Leverage or Trading on Equity:

Financial leverage, also known as trading on equity, is the use of fixed-cost sources of finance, such as debt and preference share capital, to fund assets of a company. If the return on debt-financed assets exceeds the cost of debt, earnings per share will rise without an increase in the owners' investment. Similarly, if preference share capital is used to acquire assets, earnings per share will rise. However, the impact of leverage is felt more in the case of debt because (i) the cost of debt is typically lower than the cost of preference share capital, and (ii) interest paid on debt is a deductible charge from profits for calculating taxable income, whereas dividends on preference shares are not.

Financial leverage is an important consideration when developing a company's capital structure because of its impact on earnings per share. Companies having a high level of Earnings Before Interest and Taxes (EBIT) can profitably use a high degree of leverage to boost their shareholders' equity return. The link between Earnings Per Share (EPS) at various possible levels of EBIT under alternative ways of financing is a typical approach of analysing the impact of leverage. The EBIT-EPS analysis is an important tool in the toolbox of financial manager for gaining insight into the capital structure design of the company. S/he can assess potential EBIT changes and their impact on EPS under various financing arrangements.

For a recapitulation of the effects of financial leverage on earnings per share (EPS) under various financing plans with different mixes of equity and fixed return securities, an illustration is given below which demonstrates the effect of financial leverage on EPS by considering three alternative financing plans:

Illustration 10.1

Plan A: No debt, all equity shares

Plan B: 50% debt @10%, 30% preference shares @12%, 20% equity shares

Plan C: 80% debt @10%, 20% equity shares

The face value of equity shares is Rs. 10.

The total amount of capital required to be raised is Rs. 2,00,000. The company estimates its Earnings Before Interest and Taxes (EBIT) at Rs. 50,000 annually.

Table-10.1: Effect of Financial Leverage on EPS

	Financing Plan (in Rs.)		
	A	B	C
Earnings Before Interest and Taxes (EBIT)	50,000	50,000	50,000
Interest	-	10,000	16,000
Earnings before taxes	50,000	40,000	34,000
Income Tax (50%)	25,000	20,000	17,000
Earnings after taxes	25,000	20,000	17,000
Preference share dividend	-	7,200	-
Earnings available on equity shares	25,000	12,800	17,000
No. of shares	20,000	4,000	4,000
Earnings per share (EPS)	1.25	3.20	4.25

Table-10.1 shows the impact of financial leverage (trading on equity). Plan 'C' is the most appealing from the perspective of shareholders since it has the highest EPS of Rs. 4.25. When a corporation does not use any debt or fixed-income instruments, it has the lowest EPS. You will notice that under plans 'B' and 'C', the proportion of fixed-income securities is the same (80 percent). However, Plan 'C', has a greater EPS because the dividend on the preference share is not tax deductible, whereas interest is. If the EBIT predictions prove to be true, shareholders will benefit the most if plan 'C' is implemented.

The companies using appropriate amount of debt in its capital structure and having stable cashflows will command a large premium in the market and will be in high demand. The advantage in financial leverage comes from the fact that, while the overall return (before taxes) on capital employed is 25%, the returns on preference shares and debt are only 12% and 10%, respectively. The savings from this discrepancy allow management to increase the return on equity shares along with the fact that interest is a tax deductible expense through which the overall cost of capital becomes lower as compared to the firms financed fully by equity.

While leverage can boost earnings per share (EPS) in favourable circumstances, it can also put shareholders' money at risk. Because of (a) the adverse fluctuations in the cashflows and (b) higher probability of

insolvency, as financial risk rises when debt is used. If a company's capital structure is devoid of debt, it can completely avoid financial risk. However, if no debt is used in the capital structure, shareholders will miss out on the benefits of increased EPS due to financial leverage. As a result, a company should use debt only if the financial risk perceived by shareholders does not outweigh the advantage of greater EPS.

ii) Cost of Capital

The costs of numerous sources of finances are a complicated topic that requires its own approach. It goes without saying that lowering the cost of capital is beneficial. As a result, if all other factors remain constant, cheaper suppliers should be favored. The minimal return expected by a source of money is the cost of that source of financing. The expected return is determined by the level of risk that investors are willing to take. Shareholders take on a higher level of risk than debt holders. The rate of interest is fixed in the case of debt holders, and the corporation is legally obligated to pay interest whether it earns profits or not.

The dividend rate is not defined for shareholders, and the Board of Directors is under no legal responsibility to pay dividends even if the firm has produced profits. Debt holders get their money back after a set amount of time, whereas shareholders only receive their money back when the company is wound up. This leads to the conclusion that debt is a less expensive source of capital than equity. Interest costs are tax deductible, which lowers the cost of debt even further. Although preferred share capital is less expensive than equity capital, it is not as inexpensive as debt money. As a result, a corporation should use debt to lower its overall cost of capital.

However, it must be understood that a corporation cannot continue to reduce its overall cost of capital by using debt. Debt becomes more expensive beyond a certain point because of the increasing risk of excessive debt to creditors and shareholders. As the level of leverage rises, the risk to creditors rises as well. Once the debt has reached a certain level, they may demand a higher interest rate or refuse to lend to the company at all.

In addition, the enormous debt puts the stockholders' position in jeopardy. As a result, the equity cost of capital rises. As a result, while debt lowers the overall cost of capital up to a degree, beyond that point, the cost of capital begins to rise, making it unfavorable to use debt further. As a result, there is a mix of debt and equity that lowers the firm's average cost of capital while increasing the market value of its stock.

The cost of retained earnings and the cost of a fresh issue of shares are included in the cost of equity. The cost of debt is less than the cost of both of these equity capital sources. The cost of retained earnings is less than the cost of new issuance. Since the company does not have to pay personal taxes, which are paid by shareholders on distributed earnings, the cost of retained earnings is lower than the cost of new issues, and because, unlike new issues, retained profits do not incur floatation charges. As a result, between these two sources, retained earnings are preferable.

When the leverage and cost of capital aspects are considered, it appears appropriate for a company to use a higher amount of debt if its cashflows are stable and do not fluctuate significantly and the cashflows are over and above the required cashflows to service interest on debt and the principal repayment. In fact, debt can be employed to bring the average cost of capital down to zero. Together, these two parameters determine the maximum amount of debt that can be used. Other considerations, however, should be considered when determining a company's suitable financial structure.

Theoretically, a company's debt and equity balance should be such that its overall cost of capital is as low as possible. Let us look at an illustration to better understand this notion.

Illustration-10.2

A company is planning for an appropriate capital structure. The cost of debt (after tax) and of equity capital at various levels of debt equity mix are estimated as follows:

<i>Debt as percentage of total capital employed</i>	<i>Cost of debt (%)</i>	<i>Cost of equity (%)</i>
0	10	15
20	10	15
40	12	16
50	13	18
60	14	20

Determine the optimal mix of debt and equity for the company by calculating composite cost of capital?

For determining the optimal debt equity mix, we have to calculate the composite cost of capital, i.e., K_o which is equal to $K_{ip1} + K_{ep2}$.

Where,

K_i = Cost of Debt

p_1 = Relative proportion of debt in the total capital of the firm

K_e = Cost of Equity

p_2 = Relative proportion of equity in the total capital of the firm

Before we arrive at any conclusion, it would be desirable to prepare a table showing all necessary information and calculations.

Table-10.2: Cost of Capital Calculations

K_i %	K_e %	p_1	p_2	$K_{ip1} + K_{ep2} = K_o$
10	15	0.0	1.00	$0.0 + 15.0 = 15.0$
10	15	0.2	0.8	$2.0 + 12.0 = 14.0$
12	16	0.4	0.6	$4.8 + 9.6 = 14.4$
13	18	0.5	0.5	$6.5 + 9.0 = 15.5$
14	20	0.6	0.4	$8.4 + 8.0 = 16.4$

The best debt-to-equity ratio for a corporation is when the composite cost of capital is the lowest. Table-10.2 shows that a 20 percent debt/80 percent equity combination results in a minimum composite cost of capital of 14 percent. Any other debt-to-equity ratio results in a greater overall cost of capital. A mix of 40% debt and 60% equity, with a K_o of 14.4 percent, comes closest to the minimal cost of capital. As a result, it may be argued that a capital structure consisting of 20% debt and 80% equity is ideal.

iii) Cash Flow

Conservatism is one of the characteristics of a healthy capital structure. Conservatism does not imply the avoidance of debt or the use of a minimal amount of debt. It has to do with determining the obligation for fixed charges, as well as the use of produced debt or preferred capital in the capital structure, in light of the company's ability to generate cash to cover these fixed charges.

Interest, preference dividends, and principal payments are all part of a company's fixed expenses. If the company uses a lot of debt or preferred capital, the fixed charges will be quite expensive. When a corporation considers taking on more debt, it should consider how it will cover its fixed charges in the future. Interest must be paid, and the principal amount of the debt must be returned according to the timelines. A corporation may suffer financial insolvency if it is unable to earn enough cash to pay its fixed obligations. Companies that anticipate big and consistent cash inflows can use a lot of debt in their capital structure. Employing fixed-fee sources of finance for organisations whose cash inflows are variable or unpredictable is a bit dangerous.

iv) Control

When it comes to capital structure design, the Management is sometimes guided by its desire to maintain control over the company. The current management team may not only seek to be elected to the Board of Directors, but also to run the company without influence from outsiders.

Ordinary shareholders have the legal right to choose the company's Directors. There is a risk of losing control if the corporation issues fresh shares. In the case of a publicly traded corporation, this is not a significant factor to consider. The stock of such a corporation is extensively distributed. The majority of shareholders are uninterested in participating in the company's management. They are unable to attend shareholder meetings due to a lack of time and desire. They are solely concerned with dividends and share price appreciation. By distributing shares widely and in tiny quantities, the risk of losing control can almost be eliminated.

In the case of a closely held corporation, however, keeping control may be a key factor. A single shareholder or a group of shareholders might buy all or most of the new shares, thereby taking control of the firm. Fear of losing control and so being hampered by others is a common reason for closely held companies delaying their decision to go public. To avoid the risk of losing control, companies may issue preference shares or raise debt capital.

Because debt holders do not have voting rights, it is frequently proposed that a corporation employs debt to avoid losing control. When a corporation employs a considerable amount of debt, the debt holders place a lot of constraints on it to safeguard their interests. These limitations limit the management's ability to run their businesses. An excessive amount of debt may also cause bankruptcy, which means a complete loss of control.

v) Flexibility

The ability of a company's financial structure to adjust to changing situations is referred to as flexibility. A company's capital structure is flexible if changing its capitalization or funding sources is not difficult. The corporation should be able to raise funds without undue delay or expense whenever it is needed to fund lucrative investments. When future conditions justify it, the corporation should be able to redeem its preference capital or debt. The company's financial plan should be adaptable enough to adjust the capital structure's composition. It should keep itself in a position to switch from one type of funding to another in order to save money.

vi) Size of the Company

The availability of funding from various sources is heavily influenced by the size of a company. It might be difficult for a small business to obtain long-term financing. If it is able to secure a long-term loan, it will be at a high interest rate and with uncomfortable terms. The financial structures of Small businesses are inflexible due to the highly restrictive covenants in their loan agreements. As a result, Management is unable to conduct business freely. Therefore, small businesses must rely on their own capital and retained revenues to meet their long-term needs.

A large corporation has more leeway in deciding how to arrange its capital structure. It can get low-interest loans and offer ordinary shares, preferred shares, and debentures to the general public. A company should make the best use of its size in planning the capital structure.

vii) Marketability

In this sense, marketability refers to a company's ability to sell or market a security in a given timeframe, which is dependent on investors' willingness to buy that security. Although marketability may not have an impact on the original capital structure, it is an important factor to consider when selecting to issue securities. The market may prefer debenture issues at one time while accepting ordinary share issues at another. The corporation must determine whether to raise financing through ordinary shares or debt due to shifting market sentiments.

If the stock market is down, the corporation should issue debt instead of ordinary shares and wait until the stock market recovers before issuing regular shares. During a period of high stock market activity, the corporation may be unable to successfully issue debentures. As a result, it should leave its debt capacity unused and issue common stock to raise funds.

viii) Floatation Costs

When money is raised, floatation charges are incurred. The cost of floating a debt issuance is typically lower than the cost of floating an equity issuance. This may persuade a corporation to issue debt rather than common stock. There are no floating charges if the owner's capital is enhanced by keeping the earnings. The floatation cost generally is not an important factor that affects the capital structure of a company except in the case of small companies.

Activity-10.1

- a) What is the capital structure of a company made up of? Why does the corporation have a certain capital structure and not another?

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- b) Note the differences in the capital structures of any two companies and find out the reasons for the differences.

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10.5 SUMMARY

The capital structure of a firm is the mix of long-term financing sources in its total capitalization. Ownership and Creditorship securities are the two most common sources. Most large industrial enterprises use both forms of securities as well as long-term loans from financial institutions. Any company's capital structure planning is critical to any company as it has a significant impact on its profitability. A bad decision in this regard could be quite costly to the firm.

While deciding on a capital structure, it is important to keep the goals in mind, such as; profitability, solvency, and flexibility. The amount of debt and other fixed-income securities on one hand, and variable-income securities, such as equity shares on the other, is determined after a comparison of the characteristics of each type of security and careful consideration of internal and external factors affecting the firm's operations.

In the real world, concessions must be made somewhere between the aspirations of enterprises seeking funding and the expectations of those who offer them. The fundamental distinctions between debt and equity remain unchanged as a result of these concessions. In most cases, the choice of

financing is not between equity and debt, but rather between the best possible mixture of the two.

Suitability, risk, income, control, and timing all play a role in determining the debt-equity mix. The weights attributed to these elements will differ from firm to firm, based on the industry and the firm's current status. Perhaps there will never be an accurate mathematical solution to the decision on capital structure design. Human judgement is crucial in analysing conflicting factors before deciding on an acceptable capital structure.

10.6 KEY WORDS

Capital structure: The mix of various types of long-term sources of financing, such as; debentures, bonds, loans from financial institutions, preference shares, and equity shares including retained earnings is referred to as capital structure (also known as financial structure).

Cost of Capital is the (weighted) average cost of various sources of finance used by a company.

Financial Leverage (or Trading on Equity) is a type of financial planning that allows a corporation to boost its return on equity by employing loans with a lower fixed cost that is lower than the overall return on investment. Because of the financial burden, changes in EBIT (Earnings Before Interest and Taxes) have a greater impact on EPS (Earnings Per Share).

10.7 SELF ASSESSMENT QUESTIONS/ EXERCISES

- 1) What are the features of an appropriate capital structure?
- 2) Discuss the determinants of capital structure?
- 3) Do you think that different factors affecting capital structure decision will be viewed differently by different companies? Support your answer with suitable examples.
- 4) Make a comparative assessment of different types of securities from the point of view of capital structuring.
- 5) Under what conditions different types of securities would be considered more suitable?
- 6) Write notes on the following:
 - a) Trading on equity b) Cost of capital c) Flexibility in capital structure d) Closely held company.
- 7) A company wishes to determine the optimal capital structure from the following information. Determine the optimum capital structure from the viewpoint of minimising the cost of capital.

Financing Plan	Debt Amount (Rs.)	Equity Amount (Rs.)	After Tax Cost of debt Ki%	Cost equity Ke%
A	8,00,000	2,00,000	14	20
B	6,00,000	4,00,000	13	18
C	5,00,000	5,00,000	12	16
D	2,00,000	8,00,000	11	18

10.8 FURTHER READINGS

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UNIT 11 LEVERAGE ANALYSIS

Objectives:

The study of this unit will enable you to:

- Acquire an understanding of Leverage Ratios
- Examine the consequences of Financial Leverage for a Business Firm
- Trace relationship between Financial and Operating Leverages, and
- Assess the risk implications of Financial Leverage.

Structure

- 11.1 Introduction
- 11.2 Concept of Financial Leverage
- 11.3 Measures of Financial Leverage
- 11.4 Effects of Financial Leverage
- 11.5 Operating Leverage
- 11.6 Combined Leverage
- 11.7 Financial Leverage and Risk
- 11.8 Summary
- 11.9 Key Words
- 11.10 Self Assessment Questions/Exercises
- 11.11 Further Readings

11.1 INTRODUCTION

You have been familiar with the numerous types of financial ratios. The four-fundamental classes of ratios, namely liquidity, leverage, activity, and profitability, were discussed in Unit-14 Financial Ratios of MMPC-004 Accounting for Managers. The ratios covered in that unit were chosen based on their use in managing business operations.

Despite the fact that a company's management is always interested in maintaining a reasonable level of liquidity and solvency, it is the lender or banker who will insist on particular standards and monitor changes in these ratios. The leverage ratios, which reflect a company's insolvent position, are discussed in depth here. You will get an understanding of the fundamental concept of leverage as well as the role and repercussions of financial leverage by studying this unit.

Another concept of leverage was discussed in the Unit titled "Cost-Volume-Profit Analysis," and you may recall the "break-even analysis" that was presented and illustrated in that unit (MMPC-004). We have discussed the term 'operating leverage' and its significance in that unit. This unit will help you in connecting these two types of leverage concepts; financial and operating leverages.

11.2 CONCEPT OF FINANCIAL LEVERAGE

Consider how the phrases 'lever' and 'leverage' are commonly used. The following is how Webster's dictionary defines them:

The word 'lever' means 'inducing' or 'compelling.' The action of a lever or the mechanical advantage acquired by it is referred to as 'leverage'. It also refers to 'effectiveness' or 'power'. The use or manipulation of a tool or equipment known as a lever, which provides a substantive clue to the meaning and nature of financial leverage, is the most frequent interpretation of leverage. Could you figure it out?

Your response, we assume, will be negative.

Let us say we propose that our lever is the utilization of debt or borrowed funds for asset acquisition. Would you be able to grasp the meaning of the word "financial leverage"? Most likely, you require some clarification. That is something we will do. Take a look at the simple (and hypothetical) facts regarding GTB Limited below:

The GTB Limited intended to buy fixed assets worth Rs. 80 lakhs for the completion of a project, which would be financed with a Rs. 30 lakhs share capital and Rs. 50 lakhs in term loans at an 18% interest rate. On its share capital, the corporation was expected to achieve a minimum return of 20%. Other companies of similar type were earning this much, and unless GTB Limited could match that, no investor would be interested in purchasing its stock. The GTB Limited pays tax at the rate of 40% and is exempt from paying any tax on interest payments on term loans.

Now let us see what happens to the company's net return on equity (after interest and taxes) if (a) the entire Rs. 80 lakhs are raised through share sales, and (b) the financing arrangement proposed in the problem is implemented? You might estimate GTB's earning potential to be 40% (before taxes and interest) on total assets of Rs. 80 lakhs. GTB's earnings are taxed at the rate of 40%.

We present for your understanding the solution below:

Table-11.1 Effect of Financial Leverage

	Rs. 80 lakhs as Share capital (Rs. Lakh)	Rs. 30 lakh of share capital plus 50 lakhs of debt (Rs. Lakh)
Earnings on assets of Rs. 80 lakh @ 40%	32.0	32.00
Less interest: 18% on Rs. 50 lakh	--	9.00
Earnings after interest	32.00	23.00
Taxes @ 40%	12.80	9.20
Earnings after taxes	19.20	13.80
Earnings after interest and taxes as a % of share capital	24%	46%

When no debt is utilised, the net return on equity is 24 percent, but when debt is used, it is 46 percent. There has been a significant increase in the net return. We would assume at this point that using debt financing in a profitable and tax-paying corporation boosts net equity returns. Financial leverage refers to the effect of using debt financing on the returns of the firm.

You may have noticed in the above example that the increase in net equity returns from 24% to 46% occurred at a certain level of debt, namely when the debt is Rs. 50 lakhs against an equity of Rs. 30 lakh (i.e., when the debt-to-equity ratio is 5:3 or 167%) or when the debt is Rs. 50 lakhs against total assets of Rs. 80 lakhs (i.e., when the debt- assets ratio is 5:8 or 62.5 percent). These and other financial leverage measurements are examined in the following section. But, before we go any further, let us summarise the concept of financial leverage.

Financial leverage refers to a company's plan of financing assets with fixed-charge securities such as debentures and preference shares (though the latter is not necessarily included in debt). The term "financial leverage" refers to a company's financing activity. It occurs as a result of the existence of fixed financial expenses in the Capital Structure. Expenses like this are unaffected by operating earnings (EBIT). Regardless of the amount of EBIT available to pay them, they must be paid. The EBIT belongs to the shareholders after the expenses in relation to the debt capital have been paid. The effect of changes in EBIT on the earnings available to shareholders is referred to as financial leverage (EPS). It can be characterized as a company's ability to magnify the impact of changes in EBIT on EPS by using fixed financial costs.

The financial leverage is calculated as a percentage change in EPS divided by a percentage change in EBIT.

11.3 MEASURES OF FINANCIAL LEVERAGE

The quantity of debt that a company uses or intends to use might be stated in terms of total assets or total equity. Total assets will be taken at net value, and equity will include paid-up capital and reserves. Despite the fact that both shares and assets can be valued at market prices, the current discussion will solely employ book prices. Market values are difficult to get, change widely, and are not available for new ventures that plan their sources of capital using the notion of financial leverage.

The debt-equity and debt-assets ratios, which are both computed using Balance Sheet data and are inter-related, will be demonstrated. It's worth noting that this section assesses the usage of financial leverage rather than its consequences. The latter is determined by the Degree of Financial Leverage, which is explored in more detail in the following section.

With the help of an example, we will illustrate the notion of financial leverage. Bharat Engines Limited intends to purchase assets for Rs. 1 crore. The corporation has two financing options: debt and equity. The Finance Director wants to know how the debt-equity and debt-assets ratios will vary at different debt levels of (a) Zero (b) Rs. 10 lakh (c) Rs. 20 lakh (d) Rs. 30

lakh (e) Rs. 50 lakh (f) Rs. 80 lakh (g) Rs. 1 crore. The table-11.2 provides the required calculations:

Table-11.2: Debt-assets and Debt-equity Ratios (Total investment in assets = Rs 100 lakh)

Debt Rs. Lakh	Equity Rs. Lakh	Debt-assets Ratio	Debt-equity Ratio
Zero	100	Zero	Zero
10	90	10%	11.1%
20	80	20%	25%
30	70	30%	43%
50	50	50%	100%
80	20	80%	400%
100	Zero	100%	∞

Please pay attention to the final two columns in the table above. The following analysis illustrates the fundamental aspects of the two ratios and shows how they are related:

- The debt-to-assets ratio rises at a consistent rate, eventually reaching 100% and the debt-to-equity ratio rises inexorably until it approaches infinity (∞) as the amount of debt rises in the capital structure.
- The two ratios are mathematically connected and can be calculated from one another. For such derivations, the following relationships can be used:

$$\text{Debt-Assets Ratio } \left(\frac{D}{A}\right) = \frac{\frac{D}{E} \text{ Ratio}}{1 + \frac{D}{E} \text{ Ratio}} \dots\dots\dots (1)$$

$$\text{Debt-Equity Ratio } \left(\frac{D}{E}\right) = \frac{\frac{D}{A} \text{ Ratio}}{1 - \frac{D}{A} \text{ Ratio}} \dots\dots\dots (2)$$

At every debt level, the usage of these methods to derive one ratio from another can be proved. The debt-to-assets ratio is 80 percent with a debt amount of Rs. 80 lakhs, for example. Formula-(2) can be used to get the D/E ratio:

$$\frac{D}{E} \text{ Ratio} = \frac{.80}{1 - .80} = \frac{.80}{.20} = 4.00 \text{ or } 400\%$$

Similarly, with a given D/E ratio of 400% or 4.00, the D/A ratio can be derived by using formula (1) above:

$$\frac{D}{A} \text{ Ratio} = \frac{4.00}{1 + 4.00} = \frac{4.00}{5.00} = 0.80 \text{ or } 80\%$$

The D/A and D/E ratios are both used to calculate financial leverage. It is worth noting that the D/E ratio exaggerates the amount of financial leverage at all levels of debt and becomes unclear at 100% debt. As a result, using the debt-to-asset ratio as a measure of financial leverage may be more technically

possible.

In recent literature, you may come across certain ratios that seek to quantify the use of financial leverage. They are as follows:

- a)
$$\frac{\text{Debt}}{\text{Total Value of the firm (at market Price)}}$$
- b)
$$\frac{\text{Return on Equity}}{\text{return on total Capital}}$$

Activity-11.1:

1. Take any company's financial statements and analyse its financial leverage to demonstrate the notion of financial leverage.

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2. Answer the following:

- | | | | |
|------|---|-----|----|
| i) | Amount of leverage and degree of leverage are the same | Yes | No |
| ii) | Debt-equity ratio overstates the use of leverage | Yes | No |
| iii) | A firm (to be established) can use market values for its leverage ratios | Yes | No |
| iv) | The D/E ratio is infinite at 100% debt | Yes | No |
| v) | D/A and D/E ratios can be derived from each other | Yes | No |
| vi) | When the D/E ratio is 200%, D/A ratio would be:
(i) 80% (ii) 100% (iii) 67% (iv) 45% (v) None of these | | |

11.4 EFFECTS OF FINANCIAL LEVERAGE

Table-11.1 shows an example mentioning that financial leverage could have an impact on return on equity. You have probably seen one crucial factor to consider when using borrowed funds; that is the increase in net equity returns that such a move results in.

In reality, another ratio, Earnings Per Share (EPS), is used to quantify the impact of financial leverage. This is done in the case of joint stock corporations that have raised capital by selling equity shares, which are units of that capital. Divide earnings (after interest and taxes) by total equity to get earnings per share. It is worth noting that if a company's capital structure includes preference shares, net equity earnings will be calculated after deducting interest, taxes, and preference dividends. A company's capital structure refers to its long-term funding, which is made up of a mix of long-term debt, preference shares, and net worth (which included paid-up capital,

reserves, and surpluses). Financial structure is defined as the total of capital structure components plus short-term debt. Financial leverage and its consequences are critical considerations in capital structure planning and design.

We should emphasize that the effects of financial leverage are not always obvious and consistent across different levels of profitability and debt proportions. Before recommending a specific long-term financing mix for implementation, it may be required to investigate these impacts.

We will use an example from the last section to demonstrate the implications of financial leverage.

Bharat Engines is exploring four different debt ratios (D/A ratios): 0%, 20%, 50%, and 80%. The D/E ratios are 0 percent, 25%, 100 percent, and 400 percent, respectively.

The company's equity capital is divided into shares of Rs. 10 each, which can only be sold in the market for their face value. If business conditions are favourable, the firm forecasts a net profit (before tax) of 25% on total assets of Rs. 1 crore, a net profit (before tax) of 50% on total assets if conditions are highly favourable, and a net loss (before tax) of 25% if conditions are unfavorable. Bharat Engines is subject to a 40% income tax rate. The company's average interest rate on borrowings is projected to be 15%.

Table-11.3 shows how each of the four different debt levels affects the return on equity and earnings per share.

Table-11.3 Financial Leverage, Equity Returns & EPS

Total Investment Rs. 1 Crore

Alternative Estimates of EBIT (in Rs. Lakhs) as of Total Assets

Probable Profitability outcomes	(-25%)	+25%	+50%
CAPITAL STRUCTURE			
I: Debt = Zero, Equity = Rs. 1 Crore			
EBIT	(-25.00)	25.00	50.00
Less interest (at 15%)	zero	zero	zero
Earnings (before tax)	(-25.00)	25.00	50.00
Less tax at 40%	10.00	10.00	20.00
Net Income (after tax)	(-15.00)	15.00	30.00
Return on Equity	(-15%)	15%	30%
Earnings per share (in Rs. 10,00,000 shares of Rs. 10 each)	(-1.50)	1.50	3.00

II: Debt=Rs.20 lakh, Equity=Rs. 80 lakh			
EBIT	(-25.00)	25.00	50.00
Less interest (at 15%)	3.00	3.00	3.00
Earnings before tax	(-28.00)	22.00	47.00
Less tax at 40%	11.2	8.80	18.80
Net income	(-16.80)	13.20	28.20
Return on equity of Rs. 80 lakh	(-21%)	16.5%	35.25%
Earnings per share (Rs. 8,00,000 shares of Rs. 10 each)	(2.1)	1.65	3.525
III: Debt = Rs. 50 lakh, Equity = Rs. 50 lakh			
EBIT	(-25.00)	25.00	50.00
Less interest (at 15%)	7.50	7.50	7.50
Earnings before tax	(-32.50)	17.50	42.50
Less tax at 40%	13.00	7.00	17.00
Net income	(19.50)	10.50	25.50
Return on equity of Rs. 50 lakh	(-39%)	21%	51%
Earnings per share (Rs. 5,00,000 shares of Rs. 10 each)	(-3.9)	2.1	5.1
IV: Debt = Rs. 80 lakh, Equity = Rs. 20 lakh			
EBIT	(-25.00)	25.00	50.00
Less interest (15%)	12.00	12.00	12.00
Earnings before tax	(-37.00)	13.00	38.00
Less tax at 40%	14.80	5.20	15.20
Net income	(-22.20)	7.80	22.80
Return on Equity of Rs. 20 lakh	(-111%)	39%	114%
Earnings per share (Rs. 2,00,000 shares of Rs. 10 each)	(-11.1)	3.9	11.40

You may now have a closer look at the effects of leverage. Please note that the analysis presented in Table -11.3 above assumes:

- an average tax rate of 40% or a tax credit at the same rate in a year of loss
- four different levels of debt
- three different states of economy viz., bad, good, and very good
- the fact that equity shares of the company can be sold only at par, i.e., at Rs. 10 per share.

The following can be observed from the Table-11.3 for further study and analysis:

- Because the tax rate is 40%, the after-tax return on total assets at zero debt (i.e., capital structure I) is 60% of the before-tax return. In addition, the after-tax return on total assets and the after-tax return on equity are the same.

- b) When the return on assets exceeds the cost of debt, financial leverage is advantageous. When the return levels are 25% and 50%, this holds true for all four capital structures.
- c) When the return on assets is high, the debt ratio causes the net return on equity and earnings per share to rise. You will see that when the return on assets is at its highest (50%) (Final column of Table-11.3), the return on equity jumps from 30% at zero debt to 114 percent at 80 percent debt. The EPS has risen from Rs. 3.00 to Rs. 11.40 as a result of this increase.
- d) At various degrees of leverage, the amount of interest has an impact on the connection between after-tax return on assets and return on equity. The numerators of both ratios are related in the following way:

$$\text{EBIT} (1 - t) = \text{Net Income} + (1 - t) \text{ Interest charges} \text{----- (3)}$$

Where, 't' = tax rate

You will notice that the numerator of return on assets is to the left of the equation, whereas the numerator of return on equity is to the right.

This relationship can be verified at any debt level. Take, for example, capital structure-II in Table-11.3 at a Rs. 25 lakh EBIT level and replace relevant values in equation (3). You will receive:

$$25,00,000 (1 - .40) = 13,20,000 + (1 - .40) 3,00,000 = \text{Rs. } 15,00,000$$

- e) While larger levels of leverage boost equity returns and earnings per share, they also cause higher levels of volatility in those returns. On the basis of the data in Table-11.3, Table-11.4 highlights the lowest, maximum, and range of equity returns at various debt levels.

Table-11.4 Financial Leverage and Equity Returns

Debt/Equity ratio	Debt-assets Ratio Range	Return on Equity (ROE)		
		Unfavourable conditions	Favourable	Highly Favourable
0%	0%	-25%	30%	45%
25%	20%	-28%	35.25%	56.25%
100%	50%	-65%	51%	90%
400%	80%	185%	114%	225%

When the debt ratio is zero, the Return on Equity (ROE) ranges within a 45 percent range, but when the debt ratio climbs to 80 percent, the range climbs to 225 percent. If you look at the equity return in terms of net income or earnings per share, you will notice that it is more volatile. From the above we can conclude that financial leverage magnifies return volatility, whether measured by net income, return on equity, or earnings per share.

As a result, financial leverage appears to be a two-edged sword. It enhances the volatility of returns while magnifying them. Increased volatility means more risk in the event of a mounting interest burden, which if not fulfilled could result in bankruptcy. The riskiness of the company may increase in the eyes of equity shareholders and lenders. This aspect of financial leverage is covered in the last section of this unit.

Activity-11.2

Draw a graph illustrating the position of the four capital structures using the data in Table-11.3. The X-axis should reflect EBIT as a percentage of total assets, and the Y-axis should indicate return on equity as a percentage of total assets. What conclusions do the graphics lead you to? Are they in line with the results of the above-mentioned analysis in Table-11.3?

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11.5 OPERATING LEVERAGE

The financial Leverage, as mentioned and demonstrated in the preceding section, multiplies the danger of bankruptcy, i.e., the financial risk. We now have a new concept of leverage, which is closely linked to business risk. This is referred to as operating leverage. Indeed, operating leverage has an impact on company risk, which may be defined as the uncertainty that comes with forecasting future operating income.

We can better appreciate the concept of operating leverage if we review what we learned about break-even analysis in the Accounting for Managers (MMPC-004) course. It is worth noting that operating leverage refers to the extent to which a company has built in fixed expenses as a result of its specific or unique manufacturing process.

In many cases, a company would be able to exercise some control over the technology it uses and the production processes that go with it. Highly mechanized and automated operations are typically associated with high fixed costs but low variable costs. The degree of operating leverage is often high with such processes, the break-even threshold is relatively greater, and so variations in sales have a magnified (or "leveraged") influence on profitability. The break-even sales volume increases when the operating leverage (i.e., fixed expenses) increases. As a result, change in sales from the given volume has a higher influence on profitability. Financial Leverage, on the other hand, adds another aspect of fixed cost, namely fixed financial charges, and serves to exacerbate the impact of overall leverage on profitability.

We present the following hypothetical volume - costs - profit profile of three firms A, B and C.

Table-11.5 Operating Leverage

(Rs. in lakhs)

Units Sold	Sales at Rs.10 per unit	Firm - A		Firm - B		Firm - C	
		Cost	Profit	Cost	Profit	Cost	Profit
30,000	3.00	3.60	-.60	4.50	-1.50	5.70	-2.70
40,000	4.00	4.30	-.30	5.00	-1.00	6.10	-2.10
50,000	5.00	5.00	.00	5.50	-.50	6.50	-1.50
60,000	6.00	5.70	.30	6.00	.00	6.90	-.90
70,000	7.00	6.40	.60	6.50	.50	7.30	-.30
80,000	8.00	7.10	.90	7.00	1.00	7.70	.30
90,000	9.00	7.80	1.20	7.50	1.50	8.10	.90
1,00,000	10.00	8.50	1.50	8.00	2.00	8.50	1.50
Fixed Costs (Rs.) :		1.5 lakh		3.0 lakh		4.5 lakh	
Variable cost per unit (Rs.):		7.00		5.00		4.00	

You may have noticed the characteristics of the three firms from Table-11.5. They are:

- Sales volume in units, selling price per unit, and sales value realization are identical for all the three firms. As a result, a change in sales volume has a greater impact on profit.
- Firm-A has the lowest fixed costs, firm-B has a medium fixed cost, and firm C has the highest fixed cost. Firm-A has the least automated machinery, lowest depreciation charges, low fixed costs, and a higher per unit variable cost. Firm- B has a plant that is moderately automated. Firm-C has the most advanced plant, requiring very minimal labour per unit of output. It has a slower rate of increase in variable expenses and a higher overhead burden. With a variable cost per unit of Rs. 4.00, Firm-C has the lowest variable cost.



Figure 13.1

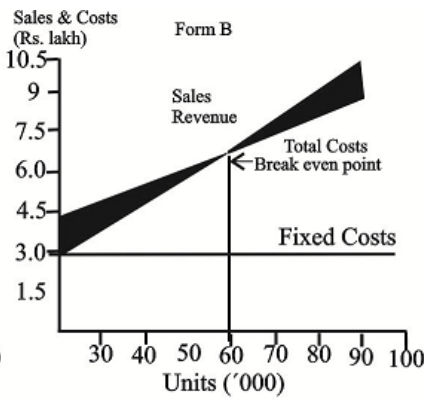


Figure 13.2

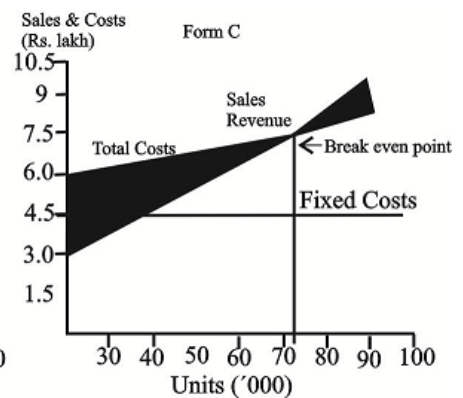


Figure 13.3

The effect of a change in volume on net operating income (profits before interest and taxes) is measured by the degree of operating leverage. The following formula can be used to obtain this:

Degree of Operating Leverage (DOL)

$$\text{DOL} = \frac{\% \text{ change in net operating income}}{\% \text{ change in units sold or sales}}$$

When a company advances from one level of sales (volume or value) to another, the degree of operating leverage is calculated. For example, when business 'B' in Table-11.5 increases its volume from 80,000 to 90,000 units, the degree of leverage is as follows: -

$$\text{DOL} = \{\Delta \text{ NOI}/\text{NOI}\} / \{\Delta Q/Q\}$$

Where,

$\Delta \text{ NOI}$ is the change in Net Operating Income Where

NOI is net operating income or earnings before interest and taxes.

ΔQ is the change in quantity or volume, and

Q is quantity or volume.

Thus, DOL for firm B for a change in output from 80,000 units to 90,000 units would be:

$$\begin{aligned} \frac{(1,50,000 - 1,00,000)/1,00,000}{(90,000 - 80,000)/80,000} &= \frac{50,000/1,00,000}{10,000/80,000} \\ &= \frac{0.50}{0.125} = 4 \end{aligned}$$

To understand the implications of DOL, compare Firm A (least operating leverage) with Firm C (most operational leverage) at any two levels of output, such as a shift in output from 80,000 to 90,000 units, or a 12.5 percent increase.

$$\text{DOL}_A \text{ at 80,000 Units} = \frac{.30/.90}{10,000/80,000} = 2.67$$

$$\text{DOL}_C \text{ at 80,000 Units} = \frac{.60/.30}{10,000/80,000} = 16.00$$

You may have noticed how earnings shift in response to volume changes. Profits will grow by 26.7 percent for Firm-A (a low-fixed cost) and by 160 percent for Firm- C for a 12.5 percent rise in output (which has high fixed cost). Profit swings will be more pronounced for companies having high fixed cost. As a result, the higher the degree of operating leverage, the bigger the profit variations in reaction to volume changes. This link exists in both directions, i.e., when volume grows and when volume decreases.

Operating leverage has ramifications for a variety of commercial and financial policy issues. Some of them are illustrated in the following

instances based on the DOL of Firm-C:

- a) Given Firm-C's high operating leverage, it is possible that volume may be increased to achieve a significant increase in profits. If Firm-C could grow its volume from 1,00,000 to 2,00,000 units by lowering the selling price to Rs. 9.00 per unit, and with no change in fixed cost (Rs.4.5 lakh) and variable cost (Rs.4), then its net operating income would be:

$$\text{NOI} = \text{PQ} - \text{VQ} - \text{F}$$

Where,

P = price per unit

V = variable cost per unit

Q = volume in units, and

F = total fixed cost.

$$= \text{Rs. } 9 \times 2,00,000 - \text{Rs. } 4 \times 2,00,000 - \text{Rs. } 4.5 \text{ lakhs}$$

$$= \text{Rs. } 18 \text{ lakhs} - \text{Rs. } 8 \text{ lakhs} - \text{Rs. } 4.5 \text{ lakhs}$$

$$= \text{Rs. } 5.5 \text{ lakhs}$$

From the above we can see that Firm-C is able to improve its profits from Rs. 1.50 lakhs at a volume of 1,00,000 units to Rs. 5.50 lakhs at a volume of 2,00,000 units. Doubling of output (due to a 10% reduction in sales price from Rs. 10 to Rs. 9) results in profits that are 3.6 times higher. Therefore, Firm-C, which has a significant degree of operating leverage, may pursue an aggressive pricing strategy.

- b) If Firm-C belongs to an industry where sales are greatly affected by changes in the overall level of the economy, resulting in wild profit fluctuations, the degree of financial leverage appropriate for Firm-C will be lower than one for a firm that belongs to an industry that is not as sensitive to changes in the economy.

11.6 COMBINED LEVERAGE

The degree of operating leverage and the degree of financial leverage can be mixed. In reality, degree of operating leverage (DOL) is considered the initial stage of leverage, whereas degree of financial leverage (DFL) is considered the second step. Financial leverage can be calculated using the following method, which evaluates the impact of changes in EBIT on earnings available to equity shareholders:

$$\text{Degree of financial leverage} = \frac{\% \text{ Change in Net Income}}{\% \text{ Change in EBIT}}$$

Before explaining the ramifications of merging DOL and DFL, the use of this formula could be demonstrated. Table-11.3's data for leverage factors of 20% debt and 80% debt can be used to demonstrate the impact of increasing EBIT from Rs. 25 lakhs to Rs. 50 lakhs. It is worth noting the following calculations:

DFL (80%) the degree of financial leverage at 80% debt.

$$\begin{aligned}\text{DFL (80\%)} &= \frac{(22.80 - 7.80) / 7.80}{50.00 - 25.00 / 25.00} \\ &= \frac{(15.00 / 7.80)}{25.00 / 25.00} = \frac{1.92}{1.00} = 1.92\end{aligned}$$

DFL (20%) the degree of financial leverage at 20% debt.

$$\begin{aligned}\text{DFL (20\%)} &= \frac{(28.20 - 13.20) / 13.20}{(50.00 - 25.00) / 25.00} \\ &= \frac{(15.00 / 13.20)}{25.00 / 25.00} = 1.14\end{aligned}$$

The values of 1.92 and 1.14 are simple to comprehend. When the debt ratio (or leverage factor) is 80 percent, a ten percent rise in EBIT results in a 19.2 percent rise in net income available to equity shareholders (10×1.92). With a leverage factor of 20%, a 10% rise in EBIT only results in an increase of 11.4 percent (10×1.14) in net income or earnings available to equity shareholders. You can conclude that a high level of leverage magnifies equity earnings.

The degree of financial leverage (DFL) will be 1.00 if there is no debt (i.e., unity). DFL will rise above 1.00 or 100 percent if debt is used. The DFL can be thought of as a multiplication factor, and when it is 1.00, there is no magnification in net income or return on equity, or in earnings per share.

The degree of magnification in Net Income (NI), Return on Equity (ROE), and Earnings per Share (EPS) for a given increase in sales is measured using a mixture of operating and financial leverage. When a company uses a lot of operating and financial leverage, modest changes in sales can cause big swings in NI, ROE, and EPS.

The Degree of Combined Leverage (DCL) may be measured by using the following formula:

$$\text{DCL} = \text{DOL} \times \text{DFL}$$

$$\text{DCL} = \frac{\% \text{change in EBIT}}{\% \text{change in sales}} \times \frac{\% \text{change in EPS}}{\% \text{change in EBIT}}$$

$$\text{DCL} = \frac{\% \text{change in EPS}}{\% \text{change in sales}}$$

It is worth noting that different DOL and DFL combinations can result in the same DCL. If management has a target DCL, DOL or DFL changes may be made to meet the target DCL. For example, if a firm's operating leverage is high due to the nature of its operations, the financial leverage may be appropriately reduced to avoid lowering the targeted combined leverage, and vice versa.

11.7 FINANCIAL LEVERAGE AND RISK

At the beginning of this unit, we discussed the concept of risk. As you may recall from our previous discussion, the concepts of operating, financial, and combined leverage have all been studied in order to determine the amount of risk (business, financial, and combination) that the firm bears as a result of actions to adjust the various degrees of leverage. In fact, the degree to which various metrics of net income fluctuate in response to changes in sales or EBIT has a direct impact on a variety of business and financial strategies.

Risk can be quantified by using a variety of statistical methods. Let us, calculate one such metric known as coefficient of variation using the data given below alongwith data in Table 11.3.

Table-11.6 Cost Structure of Bharat Engines Ltd.

	Rs. in lakhs		
Sales (units)	1875	8125	11250
Sales @ Rs. 1,000 per unit	18.75	81.25	112.50
Fixed operating cost	40.00	40.00	40.00
Variable operating costs (20% of sales in Rs)	3.75	16.25	22.50
Earnings before interest and taxes (EBIT)	-25.00	25.00	50.00
Pre-tax return on total assets (%)	-25.00	25.00	50.00

The total cost can be estimated as follows:

Total Cost = Fixed operating costs + Variables operating costs per unit × Sales = 40 lakhs + 0.20 sales

The assignment of probabilities to the possible levels of sales that the management has anticipated is the first step in obtaining a measure of coefficient of variation. In a nutshell, probability is the likelihood of an event occurring. Probability is 1.0 if it is certain; otherwise, it is always a fraction of unity (1).

Management has no control over the status of the economy, but it does have power over company policies, which can be reliably predicted. The state of the economy might range from "extremely poor" to "extremely good," and managerial attitudes of pessimism or optimism might reflect this. Assume that Bharat Engines Ltd.'s management has assigned the following probabilities based on the above-mentioned consideration:

Table-11.7 Estimated Probabilities

Stage of Economy	Expected sales (Rs. lakh)	Probability of expected sales
A	18.75	.2
B	81.25	.5
C	112.50	.3

Note: All probabilities must add up to 1.00

Now we use information from Tables-11.3, 11.6 and 11.7 and present computations of coefficient of variations in Table-11.8 below:

Table-11.8: Calculation of Coefficient of Variation (CV)

Capital Structure	State of the Economy (S)	Probability (P_s)	Return on Equity	$P_s \times ROE$	$(ROE - RO\bar{E})$	$P_s \times (ROE - RO\bar{E})^2$
Zero Debt	A	.2	-.15	-.03	-.285	.0162
	B	.5	.15	.075	.015	.0001
	C	.3	.30	.090	.165	.0082
	$RO\bar{E} = .135$ $\sigma = .157$; $CV = \sigma / RO\bar{E} = .157 / .135 = 1.163$					.0245 = σ^2
20% Debt	A	.2	-.21	-.0420	-.3563	.0254
	B	.5	.165	.825	.0187	.0002
	C	.3	.3525	.1058	.2062	.0128
	$RO\bar{E} = .1463$ $\sigma = .1959$; $CV = \sigma / RO\bar{E} = .1959 / .1463 = 1.339$					.0384 = σ^2
50% Debt	A	.2	-.39	-.078	-.530	.05618
	B	.5	.13	.065	.010	.00005
	C	.3	.51	.153	.370	.04107
	$RO\bar{E} = .1463$ $\sigma = .3119$; $CV = \sigma / RO\bar{E} = .3119 / .140 = 2.228$					.9730 = σ^2
80% Debt	A	.2	-1.11	-.222	-1.275	.3251
	B	.5	.39	.195	.225	.0253
	C	.3	.64	.192	.475	.04107
	$RO\bar{E} = .165$ $\sigma = .6466$; $CV = \sigma / RO\bar{E} = .6466 / .165 = 3.919$					.4181 = σ^2

Legend: S = State of Economy, i.e., bad, good, very good

P_s = Probability of occurrence of the state of the economy

ROE = Return on equity

$P_s \times ROE$ = Probability $\times$ Return on equity

$RO\bar{E}$ = Expected Value of Return on Equity (Mean)

σ^2 = Variance

σ = Standard Deviation

CV = coefficient of variation

Let us study Table-11.8 and its results carefully. The four sections of the table depict the four capital structures viz., zero debt, 20% debt, 50% debt and 80% debt. You may notice that as the leverage factor (viz., Debt ratio) rises, the coefficient of variation also goes up. Thus, for zero debt, the Cv is 1.163 and for 80% debt it shoots up to 3.919. On the basis of the data furnished and probability information generated, it may be concluded that the business risk (which is the sum of operating risk and financial risk) rises with financial risk in the case of Bharat Engines Ltd.

Calculations similar to those given in Table-11.7 can be performed for determining the risk character of the firm in response to amounts of financial leverage stipulated. This analysis helps to plan capital structure.

11.8 SUMMARY

The financial and operating leverages are crucial concepts to understand when assessing a company's business and financial risk. The use of fixed expenses in operations is referred to as operating leverage, and it is tied to the firm's production processes. The larger the operating leverage, the larger the operational risk. Simultaneously, a high level of operating leverage causes profits to rise quickly after the break-even point is reached.

The use of debt to finance non-current assets is referred to as financial leverage. Leverage is successful if the return on assets exceeds the cost of debt, i.e., it improves returns on equity. As a result, a high level of financial leverage multiplies financial risk. Because of the increased risk associated with greater fixed costs, the cost of debt rises to some extent when financial leverage is used. When this occurs, the firm's riskiness rises in the view of equity investors, who begin to demand a larger return to compensate for the increased risk. Financial leverage and operating leverage are related with each other. Both have similar effects on profits. A greater use of either i.e., operating, or financial leverage leads to following results:

- a) The break-even point is raised.
- b) The impact of change in the level of sales on profits is magnified.

The impacts of operating and financial leverage are mutually reinforcing. Operating, or first-stage leverage, affects earnings before interest and taxes (i.e., net operating income), whereas financial, or second-stage leverage, affects earnings after interest and taxes (i.e., net operating income) (i.e., net income available to equity shareholders).

To analyse their impact on a company's profitability, operating and financial leverages are quantified in relative terms. The degrees of operating and financial leverage are used to get these figures. To measure the consequences of changes in sales on net income or earnings per share, a combined degree of financial and operating leverage can be estimated.

The financial leverage and risk are connected variables, and the coefficient of variation, a statistical metric, can be used to quantify the firm's risk at various levels of leverage or debt ratio.

11.9 KEY WORDS

Financial Leverage refers to the use of debt in the financing of a firm. It indicates the presence of fixed-return securities in the company's capital structure.

Operating Leverage is the use of fixed costs in operations. A high operating leverage factor indicates the presence of automated production processes.

Leverage Factor refers to the ratio of long-term debt to total assets.

Capital Structure is the long-term financing plan of a firm. Debentures, preference shares, other fixed-return instruments, long-term loans, equity shares, reserves, and surplus are all covered.

Financial Structure is the total financing plan of a firm, which, besides all components of capital structure, also includes short-term debt.

Degree of Operating Leverage is the percentage change in net operating income in response to a percentage change in sales (volume or value).

Degree of Financial Leverage is the ratio of changes in earnings before interest and taxes to changes in net income available to equity investors.

Degree of Combined Leverage is the percentage change in net income after interest and taxes as a result of a change in sales %. (volume or value).

Risk includes both operating risk (as given by the degree of operating leverage) and financial risk (as reflected by the degree of financial leverage) and is evaluated by a statistical measure known as coefficient of variation.

11.10 SELF ASSESSMENT QUESTIONS/ EXERCISES

1. How does the use of financial leverage affect the break-even point? Illustrate.
2. In what way financial leverage is related to operating leverage? Discuss with an example.
3. 'Risk increases proportionately with financial leverage'. Refute this statement with reasons.
4. Other things remaining the same, firms with relatively stable sales are able to incur relatively high debt ratios. Do you agree with this statement?
5. Why EBIT is generally considered to be independent of financial leverage? Why should EBIT actually be influenced by financial leverage at high debt levels?
6. Other things being constant, if Firm 'A' has more Operating leverage than Firm 'B', then a given percentage decline in sales will cause a larger percentage decline for Firm 'A' than for Firm 'B' in
(a) EBIT (b) Net Income (c) Both (a) and (b) (d) None of these
7. One of the components of a firm's financial structure that is not a component of its capital structure is:
(a) Debentures (b) Reserves (c) Convertible Preference (d) Short-term debt
8. Financial leverage is different from operating leverage in that it is concerned with
(a) Capital structure (b) uncertainty of markets (c) inefficient financial managers (d) uncertain estimates of EBIT

9. In general, financial leverage is favourable whenever the return on assets exceeds the
(a) Cost of equity share capital (b) total cost of capital (c) net return after taxes (d) cost of debt
10. Highly leveraged companies are most likely to be found in industries where sales are
(a) Increasing around a trend line (b) relatively unstable (c) relatively stable (d) relatively uncertain with high margins
11. The debt ratio of Firms A and B are 60% and 30%, respectively. Both firms have assets totaling Rs. 50 crores and both have a cost of debt of 8 per cent. Firm A earns 12 per cent before interest and taxes on its total assets. Assume a 50 per cent tax rate and answer the following questions:
(a) What does A earn on equity after interest and taxes?
(b) If B is to earn the same rate on equity after taxes as A, what must it earn before interest and taxes on its assets?

	(A)	(B)
(i)	15 %	7 %
(ii)	9%	15%
(iii)	7%	12%
(iv)	9%	12%
(v)	7%	15%

12. Triveni Dyes Ltd. desires to increase its assets by 50% to execute large government contracts it has received; the expansion could be financed by issuing additional equity shares at a net price of Rs. 45 per share (the price earnings ratio being 20). Alternatively, debt at a cost of 10% could be increased with a price earnings ratio of 15. The balance sheet is given below:

Current Balance Sheet of Triveni Dyes Ltd.

	Rs.		Rs.
Debt (8%)	20,000	Total assets	90,000
Equity shares of Rs. 10 each	60,000		
Reserves	10,000		
Total claims	90,000	Total assets	90,000

Assume that the gross profit margin is 12% of estimated sales of Rs. 4,00,000 and that the tax rate is 35%. What are the expected market prices, after expansion, under the two alternatives?

Debt (Rs.)	Equity Shares (Rs.)
(a) 13.15	20.20
(b) 29.30	41.70
(c) 52.35	66.20

- (d) 68.10 86.20
 (e) 86,50 99.20

13. Chakradhar Seshan has developed a revolutionary new computerized method of preparing tax returns for individuals. He has a choice of computers on which to install his new process. Under Plan L he would lease a computer for Rs. 5 lakhs per year and process returns with a variable cost of Rs. 2 per, return. Under plan B he would lease a smaller, less efficient computer for Rs. one lakh per year, but processing costs under plan B will be Rs. 12 per return. Under either process, Seshan would charge Rs. 22 per return processed.

A. Answer the following questions:

- i) Which plan has a higher degree of operating leverage?
- ii) Construct break-even charts of the two plans.
- iii) At what volume of tax returns would Seshan have the same operating profit under either plan?
- iv) Based on this information only, which plan is riskier?

B. Assume that Seshan decides to use the large computer described under plan L. Seshan now needs Rs. 20 lakhs to build facilities, obtain working capital, and start operations. He has some money of his own with which he would buy stock and the balance of the required funds can be obtained in the form of debt or equity. If Seshan borrows part of the money, his interest charges will depend upon the amount borrowed according to the following schedule:

Amount borrowed	% of debt a upper end of class-interval in capital structure	Interest rate of total amount borrowed
Up to Rs. 2 Lakhs	10%	9.00%
More than Rs. 2lakhs and up to Rs. 4 lakhs	20%	9.50%
More than Rs. 4 lakhs and up to Rs. 6 lakhs	30%	10.00%
More than Rs. 6 lakhs and up to Rs. 8 lakhs	40%	15.00%
More than Rs. 8 lakhs up to 10 lakhs	50%	19.00%
More than Rs. 10 lakhs and up to Rs. 12 lakhs	60%	26.00%

Assume further that the equity shares can be sold at Rs. 20 per share regardless of the amount of debt the company uses. This will be the case at the time of initial offering of shares. Then, after the company begins operations, the price of its shares will be determined as a multiple of earnings per share. This multiple, viz., price-earnings (P/E) ratio will depend upon the capital structure as follows:

Debt-Assets Ratio	P/E Ratio
0 to 9.99%	12.5
10.00 to 19.99%	12.0
20.00 to 29.99%	11.5
30.00 to 39.99%	10.0
40.00 to 49.99%	8.0
50.00 to 59.99%	6.0
60.00 to 69.99%	5.0

If the company processes 50,000 returns annually and that its effective tax is 40%, calculate the company's EPS at different debt-assets ratios.

11.11 FURTHER READINGS

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2. Pandey. I.M., 2021, Financial Management, Pearson Education India, New Delhi
3. Sheridan Titman, Arthur J. Keown, and John D. Martin, 2019, Financial Management: Principles and Applications, Pearson Education India, New Delhi.
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BLOCK-4
DIVIDEND DECISIONS

Unit 12 Dividend Theories

Unit 13 Dividend Policies



UNIT 12 DIVIDEND THEORIES

Objective:

The objectives of this Unit are to:

- Explain the nature and significance of Dividend Decisions.
- Familiar with various theories of Dividend Policy

Structure:

- 12.1 Introduction
- 12.2 Theories of Dividend
- 12.3 Relevance Theories of Dividend
 - 12.3.1 Traditional Theory
 - 12.3.2 Walter's Model
 - 12.3.3 Gordon's Model
- 12.4 Irrelevance Theory - MM Hypothesis
- 12.5 Summary
- 12.6 Self Assessment Questions/Exercises
- 12.7 Key Words
- 12.8 Further Readings

12.1 INTRODUCTION

The major decisions of financial management of any business are investment, financing, and dividend decisions. The dividend decision is also an integral part of financing decision. When a company earns profits, it must decide as to how much of the profit should be distributed by way of dividend to the shareholders and how much to be retained for future purpose. These retained earnings are the internal sources of finance to the company. Thus, the earnings available to shareholders are equal to the dividends plus retained earnings.

The success of any business firm rests not only on the optimal utilization of funds but also on efficient management of income earned from its business operations. The distribution of fair amount of dividend to shareholders, provision for sufficient reserves to finance future opportunities and to absorb the shocks of business and provision of adequate resources for retiring old bonds and redeeming other debts call for effective management of income. The efficient management of income strengthens the financial position of the business enterprise and enables the firm to withstand seasonal fluctuations and oscillations. It also helps in enlisting the support of the shareholders in future and finally facilitates in raising funds from different avenues of capital market.

As such the dividend decision is one of the most important areas of decision making for a finance manager. Now, the issue is how significant is the

dividend decision? Does it affect the value of the firm? Does it affect the cost of capital of the company? If the answer to these two questions is 'yes' dividend decision is significant. The actions taken in this area affects the growth of a firm and its value. Nevertheless, opinions of the financial wizards, as evidenced from their theories, are not unanimous in this regard.

12.2 THEORIES OF DIVIDEND

You are aware that any theory of finance deals with various variables, which are supposed to have bearing on the value of a business firm. Value of a firm (v) is taken to be a function of:

$$\therefore V = f [I, F, D, T, f - \dots]$$

Where,

I = Investments which determine the earning power of the firm

F = Debt/Equity mix (capital structure) which decides the cost of capital of the firm

T = Tax rate which partly determines the earnings available either for dividend distribution and or for retention

D = Dividend decision which determines the amount of earnings going to the shareholders and retained by the firm for future purpose

f = Floatation costs or issue costs which are incurred by a firm when it raises funds externally.

You must have seen that in case of capital structure theories, the value of a firm is taken to be a function of capital structure (debt/equity ratio) when other determinants or influencing variables are held constant. Similarly, in a theory of dividend the value of a firm is taken to be a function of dividend decision when other influencing variables are held constant. On the question of influence of dividend decision on the value of the firm and cost of capital there are contradicting views. One view states that the dividend decision does not influence the value of a firm, which means the dividends are irrelevant. Another school of thought is that the dividends are relevant, which means the value of a firm depends on the dividend decision. Therefore, theories of dividend can broadly be classified into two groups:

- a) which consider dividend policy as a relevant variable to enhance shareholder's wealth, and
- b) theories which consider dividend policy as of no relevance.

In the next section of this unit, we will discuss the various contributions made by these two schools of thought.

12.3 RELEVANCE THEORIES OF DIVIDEND

The relevance dividend theories support the view that the dividend policy has profound impact on the value of a firm. There are three theories under this school of thought. They are:

- (a) Traditional Theory
- (b) Walter's Model
- (c) Gordon's Model

12.3.1 Traditional Theory

The traditional theory was expounded by B. Graham and D.L. Dodd. According to them, “..... the stock market is overwhelmingly in favour of liberal dividends as against niggardly dividends”. As per this model the importance attached to liberal current dividends by the shareholder is more. The shareholders give less importance to capital gains that may arise in future. Therefore, firms which pay more current dividends will have higher market value than the firms which pay less dividends.

The model is expressed in the following way-

$$P = M \left[D + \frac{E}{3} \right] \quad (1)$$

Where,

P = Market price per share

D = Dividend per share

E = Earnings per share

M = Multiplier

In the above model earnings per share (E) is equal to the sum of dividend per share (D) and retained earnings per share (R)

$$\therefore E = D + R \quad (2)$$

Substitute this expression in Equation-1

$$P = M \left[D + \frac{(D + R)}{3} \right] \quad (3)$$

On simplification,

$$P = M \left[\frac{4D + R}{3} \right] = \left[\frac{4}{3} D + \frac{1}{3} R \right] \times M \quad (4)$$

The weight attached to dividends is equal to four times the weight attached to retained earnings (R). These weights provided by Graham and Dodd are based on their subjective judgement and not derived from objective analysis. According to their view the liberal payout policy has favourable impact on stock prices.

12.3.2 Walter's Model

Professor James E. Walter emphasized that dividend policy is a critical factor affecting the firm's value. According to him, dividend policy hinges on firm's internal rate of return (r) and the cost of capital (k).

This model is based on the following assumptions:

- i) the firm finances new investments through retained earnings only.
- ii) the firm's internal rate of return, and cost of capital are constant.
- iii) 100 % of earnings is either distributed as dividends or reinvested internally.
- iv) The initial earnings and dividends remain constant forever. The earnings per share (EPS) and dividends per share (D) may be changed to determine results, but any given values of EPS, and the D assumed to remain constant forever in determining a given value.
- v) The firm has a very long infinite life.

The following is the Walter's formula to determine the market price (P) per share:

$$P = \left[\frac{D + (E - D)r / k}{k} \right]$$

Where,

P = Market price of an equity share (MPS)

D = Dividend per share (DPS)

E = Earnings per share (EPS)

r = Rate of return on investment

k = Cost of capital

(E - D) = Retained earnings

(E - D)r = Return on retained earnings invested.

The above equation gives the sum of the present value of future stream of dividends (D/K), and capital gains resulted by reinvestment of retained earnings (EPS-D) at the firm's internal rate of return (r). The discount value is equal to the firm's cost of capital (K). The effect of dividend policy on the firm's share value is explained in the following Illustration using the Walter's model. The basic data and computations are given in Table-12.1 based on formula:

Table-12.1: Dividend Policy and the Value of Share

Basic Data	Growth Firm	Normal Firm	Declining Firm
	(r > k) R= 16% K= 10% EPS= Rs. 10	(r = k) R= 10% K= 10% EPS= Rs. 10	(r < k) R= 8% K= 10% EPS= Rs. 10
When payout ratio = 0%	D=Rs. 0 P= $\frac{0 + .16/.10 (10-0)}{.100}$ =Rs. 160	D=Rs. 0 $\frac{(10/.10)(10.0)}{.100}$ =Rs. 100	D=Rs. 0 $\frac{(.08/.10)(10.0)}{.100}$ =Rs. 80

When payout ratio = 30%	D=Rs. 3 $P = \frac{3 + (.16/.10)(10-3)}{.100}$ =Rs. 142	D=Rs. 3 $\frac{3 + (10/.10)(10-3)}{.100}$ =Rs. 100	D=Rs. 3 $\frac{3 + (.08/.10)(10-3)}{.100}$ =Rs. 86
When payout ratio = 50%	D=Rs. 5 $P = \frac{5 + (.16/.10)(10-5)}{.100}$ =Rs. 130	D=Rs. 5 $\frac{5 + (10/.10)(10-5)}{.100}$ =Rs. 100	D=Rs. 5 $\frac{5 + (.08/.10)(10-5)}{.100}$ =Rs. 90
When payout ratio = 80%	D=Rs. 8 $P = \frac{8 + (.16/.10)(10-8)}{.100}$ =Rs. 112	D=Rs. 8 $\frac{8 + (10/.10)(10-8)}{.100}$ =Rs. 100	D=Rs. 8 $\frac{8 + (.08/.10)(10-8)}{.100}$ =Rs. 96
When payout ratio = 100%	D=Rs. 10 $P = \frac{10 + (.16/.10)(10-10)}{.100}$ =Rs. 100	D=Rs. 10 $\frac{10 + (10/.10)(10-10)}{.100}$ =Rs. 100	D=Rs. 10 $\frac{10 + (.08/.10)(10-10)}{.100}$ =Rs. 100

Thus, the Walter's model brings out that the dividend policy does help to maximize the shareholder's value, if used properly depending on its internal rate of return and cost of capital. So, the dividend policy differs depending on whether the firm falls into the category of growth firm, normal firm, or declining firm. The optimum dividend policy for these three firms is as follows:

- Growth Firms:** Growth firms have very good investment opportunities with return greater than their respective cost of capital. It can be observed from the Table-12.1 that the firm's value will be maximized when the firm reinvests 100 percent of earnings, and chooses zero-dividend policy, to maximize the share value. Therefore, in case of the growth firms, shareholders would expect the company to retain earnings and pay less/nil dividends. Hence, the 0% dividends or 100% retention is advisable for growth firms.
- Normal Firms:** Over a period, firms may not find unlimited investment opportunities with return higher than their cost of capital. They may have investments with return equal to cost of capital. As a result, it can be noted from Table-12.1 that the share value remains constant, despite varying payout ratios. These firms can be indifferent to any dividend payout ratio, as there is no optimum policy. In this case, they prefer dividend rather than retention. Hence, 100% dividend payout ratio is preferable.
- Declining Firms:** These firms may not have investment opportunities giving return at least equal to the cost of capital. Such firms can at best declare 100% dividend payout to enhance shareholders' value, because the shareholders can reinvest at a higher rate than the return available to the firm. The data in Table-12.1 too supports this proposition. In this

situation, the shareholders would like to receive whole of the earnings as dividends. Retention of earnings would lead to lowering of share prices as the cost of capital is greater than the rate of return on investment.

Criticism of Walter's Model: Though Walter's model has been successful in highlighting the role of a firm's return and the cost of capital in determining the dividend policy, the model was criticized for its following un-realistic assumptions:

i) No External Financing:

Walter's model is mixing both dividend policy and investment policy by assuming that investment opportunities will be financed only with retained earnings, without resorting to either debt or new equity. With these restrictions the firm's dividend policy, and investment policy will be sub-optimal.

ii) Constant Rate of Return:

Walter's Model assumes a constant rate of return, which is in the real life may not hold good. Because firms choose from among the most profitable to less profitable projects if their respective rate of return is more than or equal to the firm's cost of capital.

iii) Constant Opportunity Cost of Capital:

Another assumption of Walter's model, which may not hold good is constant opportunity cost of capital. However, the firm's cost of capital changes with its risk, and with the macro-economic changes in the economy. Further, the present value of the firm's income changes inversely with its cost of capital. By assuming the discount rate as constant, Walter's model ignores the effect of risk on the firm's value.

Illustration-12.1

From the following details, calculate the market value of equity shares of a firm by using Walter's model:

Earnings per share (E)	= Rs.5;
Dividend per share (D)	= Rs.3;
Rate of return on Investment (r)	= 10%;
Cost of capital (k)	= 10%

Will there be any change in the market value of equity share if the dividend payout ratio is 100% in the place of present rate of 60%?

Answer: Using Walter's model, the market value of the share is calculated as:

$$V = \left[\frac{D + (E - D)r / k}{k} \right] = \frac{3 + (5 - 3) \cdot \frac{10}{100}}{.10}$$

$$= \frac{3 + 2}{.10} = \frac{5}{.10} = \text{Rs.50.}$$

If the dividend payout ratio is 100% in the place of present rate of 60%, Dividend per share (D) will be Rs.5. The market value of the share will be:

$$V = \frac{5 + [5 - 5] \cdot \frac{.10}{.10}}{.10} = \frac{5}{.10} = \text{Rs.}50$$

There is no change in the market value because return on investment (r) is equal to cost of capital (k). This is a case of normal company; dividend payout ratio has no bearing on the value of the share. That is why dividend decision is irrelevant in such cases.

Illustration-12.2:

From the following details, calculate the market value of equity share of a company by using Walter's model:

Earnings per share (E)	= Rs.5
Dividend per share (D)	= Rs.3
Rate of return on Investment (r)	= 15%
Cost of capital (k)	= 10%

Will there be any change in the value, if 100% dividends are paid instead of present 60%?

Answer: Market value of the share as per the Walter's Model is:

$$V = \frac{D + (E - D) \frac{r}{k}}{k} = \frac{3 + (5 - 3) \cdot \frac{.15}{.10}}{0.10} = \frac{3 + 2 \left[\frac{0.15}{0.10} \right]}{0.10} = \text{Rs.}60$$

If 100% of the earnings are paid by way of dividends, the dividend per share would be Rs.5, then the value is:

$$V = \frac{5 + (5 - 5) \cdot \frac{.15}{.10}}{0.10} = \frac{5}{0.10} = \text{Rs.}50$$

If no dividends are paid, the value would be:

$$V = \frac{0 + (5 - 0) \cdot \frac{.15}{.10}}{0.10} = \frac{5 \left(\frac{0.15}{0.10} \right)}{0.10} = \text{Rs.}75$$

When the dividend payout ratio is 100%, the value of the share is the lowest at Rs.50 and when dividend payout ratio is 0%, the value of the share is the highest at Rs.75. This is because the company is earning 15% rate of return on investment, when the shareholders expected rate of return (k) is 10%.

If the company is a growth company, 0% dividend payout ratio is the optimum dividend policy for such firms.

Illustration-12.3:

From the following details, find out the market value of equity share of a company by using Walter's model:

$$E = \text{Rs. } 5; \quad D = \text{Rs. } 3; \quad \text{if } r = 7.5\%; \quad k = 10\%$$

Will there be any change in the value, if the dividend payout ratio is 100% (that is, if $D = \text{Rs. } 5$)

Answer: Market value of the share as per the Walter's model, when the dividend payout ratio is 60%.

$$V = \frac{D + (E - D) \frac{r}{k}}{k} = \frac{3 + (5 - 3) \left(\frac{0.075}{0.10} \right)}{0.10} = \frac{3 + 2 \left[\frac{0.075}{0.100} \right]}{0.10} = \text{Rs. } 45$$

If 100% of the earnings are paid by way of dividends, the dividends per share would be Rs.5, then the value is,

$$V = \frac{5 + (5 - 5) \left(\frac{0.075}{0.100} \right)}{0.10} = \frac{5}{0.10} = \text{Rs. } 50$$

If 0% dividends are paid, the value would be:

$$V = \frac{0 + (5 - 0) \left(\frac{0.075}{0.100} \right)}{0.10} = \frac{5 \left[\frac{0.075}{0.100} \right]}{0.10} = \text{Rs. } 37.50$$

It can be observed from the above calculations that the value is the lowest at Rs.37.50, when dividend payout ratio is zero and the highest at Rs.50, when the payout ratio is 100%. This is because the firm is earning 7.5% on its investments, a rate less than the shareholders expected rate of return [$k=10\%$]. This is a case of declining company in which 100% dividend payment is advisable.

Nature of the Firm	Dividend policy Relevancy
(i) Growth Firm ($r > k$)	0% Dividend Payment
(ii) Declining Firm ($r < k$)	100% Dividend Payment
(iii) Normal Firm ($r = k$)	Dividend Decision is Irrelevant

Thus, the Walter's model puts emphasis over return on retained earnings (r) relative to cost of capital (k) as the critical determinant of dividend policy. Though the model suggests extreme policies like 100% dividend payout, 0% dividend payout, the model is useful under varying profitability assumptions.

12.3.3 Gordon's Model

Myron Gordon proposed a model of stock valuation, which is supporting the dividend relevance decision in case of a growth firm [when $r > k$], and in case of a declining firm [when $r < k$] and dividend irrelevance decision in case of

a normal firm [when $r = k$]. This theory relating dividend policy and the firm's value, based on the following assumptions:

- The firm has only equity capital, and no debt.
- Only retained earnings will be used for financing expansion. This assumption mixes dividend and investment policy, similar to Walter's model
- Firm's internal rate of return is constant, which is not correct in practice.
- Firm's discount rate is constant. Even this assumption is also incorrect, as is the case with Walter's model.
- The firm and its stream of earnings are perpetual.
- The corporate taxes are nil.
- The retention ratio, once decided, remains constant, leading to a constant growth rate of earnings.
- The discount rate is higher than growth rate.

According to the Gordon's model, the market value of a firm's share will be equal to the present value of future stream of dividends payable for that share. Accordingly, the value of share can be obtained by the following equation:

$$P_0 = \frac{E_1(1 - b)}{k - br}$$

Where,

P_0 = Market price of a share at the end of year 0

E_1 = Earnings per share at the end of year 1

b = Retention ratio (% of earnings retained by the firm)

$(1-b)$ = Dividend payout ratio

k = Cost of capital [rate of return expected by the shareholders]

r = return on investment

$(br = g)$ = growth rate of earnings and dividends

The above equation highlights the relationship of earnings, dividends policy, internal rate of return, and the firm's cost of equity in deciding the value of the share. The influence of dividend decision on the value of share and therefore on the firm's value can be understood by observing the following Table 12.2, in which the implication of dividend policy for growth, normal, and declining firms, is explained.

The results in the illustration can be explained as:

- If the firm's internal rate of return is less than its discount rate, retaining earnings is not useful for the shareholder's value maximization. Because, by retaining earnings in the firm to invest at a lower rate of return, the shareholders are denied the opportunity to invest at higher or at least at rates equal to the discount rate. In such situation, the 100 percent pay out will maximize the shareholder's wealth. The promoters can even think of partial or full dis-investment, if the firm's discount rate is less than the

prevailing rate of return in the market, to boost the shareholder's wealth. For normal firms, whose discount rate is equal to their internal rate of return, the dividend policy is of no significance, as each firm's value remains the same irrespective of any payout ratio adopted.

- b) The growth firms do well by retaining maximum portion of their earnings to increase the shareholders' value, because the opportunities available to the shareholders are less attractive when compared to those available to the growth firm. The conclusions drawn by Gordon's Model are akin to those of Walter's Model, essentially due to the similar assumptions made by both.

However, Gordon adds that uncertainty increases with futurity. When dividend policy is considered in this context, the discount rate cannot be assumed to be constant. Due to uncertainty, the investors may be willing to pay higher price for the share that pays higher early dividends, other things remaining constant. Therefore, Gordon concludes that dividend policy does affect the firm's value. Then even those firms having the rate of return equal to their respective discount rates cannot be indifferent to the dividend policy. The investors prefer dividend to capital gains because dividends are easier to predict, less risky, and do not involve timing decisions.

Implications:

- * When the rate of return (r) is greater than cost of capital (k) ($r > k$), the value of a share increases as the dividend payout ratio decreases. Therefore, optimum dividend payout ratio is 0%.
- * When the rate of return is equal to cost of capital ($r=k$), the value of a share remains unchanged in response to changes in dividend payout ratio. Therefore, dividend policy is irrelevant.
- * When the rate of return is less than the cost of capital ($r < k$), the value of a share increases as the dividend payout ratio increases. Therefore, 100% dividend payout ratio is optimum.

Thus, the basic Gordon model leads to dividend decision implications as that of the Walter model.

In the following Table-12.2 the implications of dividend policy are shown under Gordon's Model for Growth, normal, and declining firms.

Table-12.2: Dividend Policy and the Value of Share

BASIC DATA	Growth Firm	Normal Firm	Declining Firm
	$(r > k)$ $r = .16$ $k = .12$ $EPS = Rs. 12$	$(r = k)$ $r = .12$ $k = .12$ $EPS = Rs. 12$	$(r < k)$ $r = .09$ $k = .12$ $EPS = Rs. 12$
Pay-out ratio $(1-b) = 30\%$, Retention Ratio, $b=70\%$	$G = br = .7 \times .16 = .112$ $P_o = \frac{12(1-.7)}{.12-.112}$ $= Rs. 450$	$G = br = .7 \times .12 = .084$ $P_o = \frac{12(1-.7)}{.12-.084}$ $= Rs. 100$	$G = br = .7 \times .09 = .063$ $P_o = \frac{12(1-.7)}{.12-.063}$ $= Rs. 63$

Pay-out ratio = 60%, and Retention Ratio = 40%	$G = br = .4 \times .16 = .064$ $P_o = \frac{12(1-.4)}{.12-.064} = \text{Rs. } 129$	$G = br = .4 \times .12 = .048$ $P_o = \frac{12(1-.4)}{.12-.048} = \text{Rs. } 100$	$G = br = .4 \times .09 = .036$ $P_o = \frac{12(1-.4)}{.12-.036} = \text{Rs. } 86$
Pay-out ratio = 90%, and Retention Ratio = 10%	$G = br = .1 \times .16 = .016$ $P_o = \frac{12(1-.1)}{.12-.016} = \text{Rs. } 104$	$G = br = .1 \times .12 = .012$ $P_o = \frac{12(1-.1)}{.12-.012} = \text{Rs. } 100$	$G = br = .1 \times .09 = .009$ $P_o = \frac{12(1-.1)}{.12-.009} = \text{Rs. } 97$

12.4 IRRELEVANCE THEORY- MM HYPOTHESIS

The Irrelevance dividend theory (M.H Miller and F. Modigliani Theory) supports the view that the dividend decision has no impact on the valuation of a firm.

Modigliani and Miller (M-M) proposed an interesting model which concludes that dividend policy does not affect the firm's value. According to their hypothesis, the firm's value hinges only on its earnings which result from its investment policy. Given the investment policy, decision of retention and pay-out, they hold, will not affect the firm's value. M-M's model is based on the following assumptions:

- * The capital markets are perfect and the information is available freely.
- * Investors behave rationally and the firms have a fixed investment policy.
- * Transaction & floatation costs do not exist, and no investor can influence the capital market.
- * Securities are divisible and company's investment policy is independent of its dividend policy.
- * Investment opportunities and future profits of companies are known with certainty.
- * Either taxes do not exist or they are same on both dividend income and capital gains so that investors do not prefer one over the other.
- * The investors can forecast future prices and dividends with certainty and one discount rate is appropriate for all securities and all time periods.

When the aforesaid assumptions operate in capital market, the rate of return will be equal to the discount rate, which is same for all shares in the long-term. Consequently, the price of each share must adjust so that the rate of return, based on dividends and capital gains, on each share will be equal to its discount rate and it must be identical for all shares. The M-M hypothesis believed that the equality would take place through the process of switching from low yield shares to high yield shares.

According to M-M Model, the rate of return for one period can be computed as follows:

If we take one year period of holding, the value of share P_0 will be equal to present value of dividend paid at the end of one year (D_1) plus present value of share price at the end of one year (P_1)

$$P_0 = \frac{D_1 + P_1}{(1 + k)} \quad (1)$$

Where,

P_0 = Market Price per share at time t_0

D_1 = Dividend per share at time t_1

P_1 = Market Price per share at time t_1

K = Discount rate applicable to risk class to which the firm belongs.

Total stock value will be equal to P_0 multiplied by number of shares (N)

$$V = N \times P_0 = \frac{(ND_1 + NP_1)}{(1 + k)} \quad (2)$$

If the firm issues 'M' number of new shares at price ' P_1 ' at the end of one year, it brings MP_1 of rupees of capital. These new shares will not receive any dividend.

We can add MP_1 and subtract MP_1 to the numerator of Equation-2, the value will not change.

$$NP_0 = \frac{ND_1 + NP_1 + MP_1 - MP_1}{(1 + k)} \quad (3)$$

$$NP_0 = \frac{ND_1 + (N + M)P_1 - MP_1}{(1 + k)} \quad (4)$$

The current value of stock is equal to the present value of dividends plus the stock value at the end of one year minus the value of new stock belonging to the new shareholders.

If we assume that the firm's net income during the year is 'X' and its total new investment during the year is 'I' and it does not use debt, the sources and uses of funds at the end of one year will be as follows:

Sources of funds	Uses of funds
New Share Capital (MP_1)	New Investment (I)
Net Income (X)	Dividends (ND_1)

Sources of funds are equal to uses of funds.

Sources of funds = uses of funds

$$MP_1 + X = I + ND_1 \quad (5)$$

$$MP_1 = I + ND_1 - X \quad (6)$$

Now, substitute Equation-6 into Equation-4

$$NP_0 = \frac{ND_1 + (N + M)P_1 - [I + ND_1 - X]}{(I + k)} \quad (7)$$

$$NP_0 = \frac{ND_1 + (N + M)P_1 - I - ND_1 + X}{(I + k)} \quad (8)$$

$$NP_0 = \frac{(N + M)P_1 - I + X}{(I + k)} \quad (9)$$

Equation-9 presents MM's basic expression of current value of a company. From the equation we can understand that the value of a company is dependent upon its net income, the investment, the amount of capital and the cost of capital. But the value is not influenced by the dividends.

MM argued that any gain in stock value resulting from an increase in dividends is exactly offset by a decrease in the stock value as a result of fall in the stock end of period value (P_1). The MM hypothesis believed that the shareholders received income either by way of dividends (D_1) or capital gain, which is the difference between current price (P_0) and price at the end of the period (P_1). According to them, the shareholders are indifferent between current dividend or capital gain. Therefore, dividend policy is irrelevant.

Illustration-12.4: A chemical company currently has 1,00,000 equity shares selling at Rs.100 each. The firm expects to earn a net income of Rs.10,00,000 during the current year and is contemplating to declare a dividend of Rs. 6 per share at the end of the current year. It has a proposal for a new investment of Rs.20,00,000 and the company's cost of capital (k) is 10%. Illustrate with the help of the MM model that payment of dividend does not matter.

Answer:

We know that current value of stock is P_0 ; the present value of dividends at the end of one year (D_1) and price of stock at the end of one year (P_1).

$$P_0 = \frac{(D_1 + P_1)}{(1 + k)} \quad (1)$$

From this equation we can solve P_1 as follows:

$$P_1 = P_0(1+k) - D_1 \quad (2)$$

Situation-1: When dividends of Rs.6 per share are declared-

NP_0 = old capital = 1,00,000 shares x Rs.100 = Rs.1,00,00,000

X = Net income = Rs.10,00,000

I = New Investment = Rs.20,00,000

ND_1 = Dividend = (Rs. 6) x 100000 shares = Rs.6,00,000

MP_1 = New capital required (New Investment – Net Income + Dividends) = Rs.16,00,000

From equation (2) we can find P_1 .

$$P_1 = P_0 (1+K) - D_1 = 100 (1+10\%) - 6 = \text{Rs.}104$$

$$\text{No. of New Shares (M)} = \frac{\text{New Capital Required}}{\text{Price of New shares}} = \frac{I - (X - ND_1)}{P_1}$$

$$\left(\frac{\text{Rs.}20,00,000 - (\text{Rs.}10,00,000 - 6,00,000)}{104} \right) = \frac{16,00,000}{104} = \frac{8,00,000}{52} = \frac{2,00,000}{13}$$

$$\text{Value of Stock} = \frac{(N + M) P_1 - I + X}{1 + k}$$

$$\frac{\left[1,00,000 + \frac{2,00,000}{13} \right] 104 - 20,00,000 + 10,00,000}{(1 + 0.1)}$$

$$= \text{Rs.}1,00,00,000$$

Situation-2: When dividends are not declared.

$$N = 100000 \text{ shares. } X = \text{Rs.}10,00,000 \quad I = \text{Rs.}20,00,000$$

$$k = 10\% \quad D_1 = 0$$

$$P_1 = P_0(1+k) - D_1 = 100(1+10\%) - 0 = \text{Rs.}110.$$

$$\text{No. of New shares (M)} = \frac{I - (X - ND_1)}{P_1} = \frac{20,00,000 - (10,00,000 - 0)}{110} = \frac{10,00,000}{110} = \frac{1,00,000}{11}$$

$$\text{Value of Stock} = \frac{(N + M)P_1 - I + X}{1 + k}$$

$$= \frac{\left[1,00,000 + \frac{1,00,000}{11} \right] 110 - 20,00,000 + 10,00,000}{[1 + 0.1]} = \text{Rs.}1,00,00,000$$

$\therefore$ value of stock unaffected by dividend policy.

M-M further stated that the firm need not have only equity capital to hold their model true. They concluded that their hypothesis of dividend irrelevance holds good even if the firm raises debt capital instead of equity. For this, they put forth their indifference hypothesis with reference to leverage. These conclusions are based on several restrictive assumptions of M.M. model. The dividend policy may affect the value of a share if those assumptions are relaxed and the market imperfections are considered, as discussed under:

i) Tax Differential:

M-M model made a simplistic assumption of no taxes or same tax rate on both dividends and capital gains, but the reality is far from the assumption. In most of the countries both are taxed at different rates.

Normally dividends are clubbed with ordinary income for tax purpose which is taxed at a higher rate when compared to the capital gains.

ii) **Floatation Costs:**

M-M model assumes that the cost of retained earnings and external financing are same. But the process of raising fresh capital from the capital market involves significant expenses in terms of floatation costs which may be in the range of 6 to 10 percent of capital raised. Thus, the higher cost of external financing, makes the retention of earnings a favourable option. However, companies tend to maintain dividend payments, despite changing earnings, as a policy, unless the earnings change by a significant proportion.

iii) **Transaction and Monitoring Costs:**

MM model assumes that transaction costs do not exist. They also assume that the shareholders can sell a small portion of their shares in lieu of dividend, when they are indifferent between dividend and capital gains. But reality is far from that assumption. The shareholders have to pay brokerage and often incidental costs to sell their shares. As a percentage, the transaction costs vary inversely with the sale value of shares i.e., higher the value of shares sold lower the percentage of transaction costs and vice versa.

iv) **Existence of Perfect Capital Market:**

MM model assumes that there exists a perfect capital market where information is freely available and future share prices are known with certainty. In practice, companies do not share complete information with shareholders. The process of monitoring the company and the manager's performance involves significant costs and also leads to uncertainty in future share prices. Therefore, timing of selling the share to encash the capital gains in lieu of dividend income becomes difficult. As a result, shareholders may prefer dividend income to capital gains.

To disseminate information to the shareholders about the future earnings a company can make statements to create a favourable impression. These statements attract greater attention if they are accompanied by dividend announcement. For example, if a firm's earnings are expected to grow in the future and if the firm does not announce increase in the dividend payment, shareholders may not attach enough importance to such views of growth in future earnings. Therefore, the share value may not reach realistic value.

v) **Uncertainty and Preference for Dividend:**

MM model professes that the dividend policy continues to be irrelevant even under the conditions of uncertainty, because the share value of two firms with identical investment policies, business risk and future earnings can not be different. These views are not convincing to many researchers. According to them, investors try to reduce uncertainty to some extent through dividends. Their views are akin to the bird in-hand argument of Gordon who argues that the discount rate increases with

uncertainty, suggesting the preference of shareholders for higher dividend payment. The preference for a steady stream of income in the form of dividends by a section of investors also strengthens this argument.

vi) Diversification:

Even under the conditions of certainty, the argument of same discount rate for all firms may not hold good because of investors' preference for a diversified portfolio of securities. To fulfil their desire, shareholders like the firm to distribute the earnings to invest in other firms. As such, the investors may use higher discount rate for firms with high retention ratios compared to firms which pay high dividends by accessing external financing to meet their requirements. Therefore, the value of the firm may increase if it pays higher dividends instead of retaining them.

12.5 SUMMARY

In this unit, we have seen the contradicting views on the impact of dividend decision on the value of a firm and its cost of capital. Traditional view, which is not supported by any empirical evidence, suggested liberal dividend policy to enhance the value of firm. The Walter's and Gordon's models categorized the firms into three groups: (a) normal (b) growth (c) declining and suggested that (i) 100% pay out policy for a declining firm, (ii) 100% retention policy (zero dividends) for a growth firm, and (iii) indifference dividend policy for normal firm. Finally, the MM model is of the view that the value of a firm is independent of its dividend decision.

12.6 SELF ASSESSMENT QUESTIONS / EXERCISES

1. Explain the traditional view of Graham and Dodd relating to dividend decision.
2. Do you agree with Walter's dividend model? Discuss its relevance and limitations.
3. Examine the Gordon's view on the relevance of dividend decision.
4. Examine the MM's irrelevance hypothesis. Critically evaluate its assumptions.
5. A chemical company has a cost of capital of 12%. The current market value of the firm is Rs. 30 per share. The earnings are Rs. 5 lakhs. The new investment is Rs. 9 lakhs. Dividends are Rs.3 lakhs.

Show that [under MM assumption] the payment of dividend does not affect the value of the company.

6. You are provided with the following particulars related to a company. You must ascertain whether the dividend pay out ratio of the company is optimal (Using Walter's model).

Equity Capital = Rs.40,00,000 (number of shares 4,00,000)

Earnings of the company = Rs.5,00,000

Dividends paid = Rs.2,75,000

Price-Earnings (P/E) ratio = 12.5

The company is expected to maintain its current rate of earnings on investment.

12.7 KEYWORDS

P/E Ratio: The ratio of market price per share to earnings per share. The reciprocal of P/E ratio is cost of equity.

Dividend: The portion of company's net earnings which are paid out to the shareholders.

Dividend Payout Ratio: Ratio of Dividends to Earnings [ratio of DPS to EPS].

12.8 FURTHER READINGS

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UNIT 13 DIVIDEND POLICIES

Objectives

The objectives of this unit are to:

- Discuss the various Forms of Dividend.
- Identity the factors affecting the Dividend Decisions
- Explain the different types of Dividend Policies Followed by the companies.

Structure:

- 13.1 Introduction
- 13.2 Forms of Dividend
- 13.3 Factors Affecting Dividend Decision
- 13.4 Types Determinants of Dividend Policies
 - 13.4.1 External Factors
 - 13.4.2 Internal Factors
- 13.5 Dividend Policy
 - 13.5.1 Stable Rupee Dividend
 - 13.5.2 Incremental Dividend Policy
 - 13.5.3 Stable Dividend payout Ratio
 - 13.5.4 Residual Dividend Policy
- 13.6 Summary
- 13.7 Key Words
- 13.8 Self Assessment Questions/Exercises
- 13.9 Further Readings

13.1 INTRODUCTION

A business organisation always aims at earning profits. The utilization of profits earned is a significant financial decision. The main issue here is whether the profits should be used by the owner(s) or retained and reinvested in the business itself. This decision does not involve any problem in so far as the sole proprietary business and partnership concerns. Since company is an artificial person, the decision regarding utilization of profits rests with a group of people, viz., the Board of Directors. As in any other types of organisations, the disposal of net earnings of a company involves either their retention in the business or their distribution to the owners in the form of dividend, or both. Therefore, the decision-making is somewhat complex in the case of joint stock companies.

In case of a company, the decision regarding dividend is taken by the Board of Directors and is then recommended to the shareholders for their formal approval in the annual general meeting of the company. The disposal of

profits in the form of dividends can become a controversial issue because of conflicting interests of various parties, like the Directors, Employees, Shareholders, Debenture Holders, Lending Institutions, etc. Even among the shareholders there may be conflicts as they may belong to different income groups. While some may be interested in regular income, others may be interested in capital appreciation and capital gains. Hence, formulation of dividend policy is a complex decision, which needs careful consideration of various factors. One thing, however, stands out, instead of an ad-hoc approach, it is desirable to follow a reasonably long-term stable policy regarding dividends.

In the previous unit, you have been made aware of the relevance and irrelevance of the dividend decision in the determination of the value of a firm. In this context, different theories were proposed under a set of assumptions. Given the imperfections prevailing in the real world, a company can not treat its dividend policy irrelevant. It must carefully analyse the environment in which it is operating and take into consideration various factors that have a bearing on its valuation. Now, after realizing the importance of dividend policy, this unit covers the important dimensions of dividend policy, discusses the factors relevant for formulating the dividend policy and policy relating to stock split, bonus issues, stock repurchase, etc.

13.2 FORMS OF DIVIDEND

Dividend is a distribution of profits earned by a joint stock company among its shareholders. Mostly dividends are paid in cash, but there are also other forms, such as; Scrip dividends, Debenture dividends, Stock dividends, and, in unusual circumstances, Property dividends. These are briefly described below:

i) Stock Dividend (Bonus Shares):

Instead of paying dividends out of accumulated reserves, the latter may be capitalized by issue of bonus shares to the shareholders. Thus, while the funds continue to remain with the company; the shareholders acquire the right and this way their marketable equity increases. They can either retain their bonus shares and thus be entitled to increased total dividend in future or can sell their bonus shares and realize cash. Ordinarily, bonus shares are not issued in lieu of dividends. They are periodically issued by the prosperous companies in addition to usual dividends, certain guidelines, as laid down by the Companies Act 2013, are applicable for issue of bonus shares in India.

Let us understand this concept with an example. Suppose a hypothetical company has the following share capital and reserves:

	<u>Rs.in crores</u>
Paid up share capital (1 crore shares, @ Rs. 10/-)	10
Reserves and surpluses (retained earnings)	10
Total net worth of the firm	20

Suppose the company declares bonus shares at 1:2 ratio, that is for every 2 shares held, one bonus share will be issued. If there is one crore equity shares existing; 50 lakhs bonus shares are issued by converting reserves into paid-up capital.

After bonus issue the firm's capital structure is as under:	<u>Rs.in crores</u>
Paid-up share capital (1.50 crores shares @ Rs. 10/-)	15
Reserve & Surpluses	5
Total net worth of the firm	20

The issue of bonus shares does not affect the net worth of the shareholders. The bonus issue represents recapitalization of the owners' equity portion. It is just a transfer of reserves to paid-up capital. The shareholders future dividends may rise as the number of shares owned by them has increased, because of bonus issue. A shareholder, who originally owned 100 shares, now will be the owner of 150 shares after bonus issue.

ii) Stock Splits:

A method of either increasing or decreasing (by a reverse split) the number of shares outstanding and thereby proportionately lowering or raising the market price per share. If a company believes that its share is priced too high and that lowering the market price will enhance trading activity, one equity share is divided into two or more shares.

Before stock split: Common stock 2,00,000 shares with Rs. 10 par value
= Rs. 2,00,0000

After Stock split: Common stock 4,00,000 shares with a Rs. 5 par value
= Rs. 2,00,0000

The stock split has no effect on capital structure. It increases the number of shares and reduces stocks par value. The stock splits are made generally prior to new issue of stock to enhance the marketability of the stock and stimulate the market activity.

iii) Stock Repurchases (Buy-Back):

Company's repurchase their stock to change their capital structure or to increase the returns to the owners. Companies with exceptionally good liquid position, which do not have attractive investment opportunities, buy-back their shares. A company can buy-back its stock from the existing shareholders on a proportionate basis through the tender offer, from open market through (i) book building process or (ii) stock exchange and from odd-lot holders.

iv) Property Dividends:

A company may issue a non-monetary dividend to investors, rather than making a cash or stock payment. This form of dividend is unusual and such dividend may be in the form of inventory or securities in lieu of cash payment. A company sometimes may hold shares of other

companies, e.g., its subsidiaries that it may like to distribute among its own shareholders, instead of paying dividend in cash. In case the company sells these shares, it may have to pay capital gains, which may be subject to taxation. If these shares are transferred to its shareholders, there is no tax liability.

v) Debenture Dividends:

The companies may also issue debentures in lieu of dividends to their shareholders. These debentures bear interest and are payable after a prescribed period. It is just like creating a long-term debt. This is not a common practice.

vi) Scrip Dividends:

A company may not have sufficient funds to issue dividends in the near future, in such situation, issues a scrip dividend. The dividends can be paid only out of profits earned in the particular year or in the past reflected in the company's accumulated reserves. The profits do not necessarily mean adequate cash to enable payment of cash dividends. In case the company does not have a comfortable cash position it may issue promissory notes payable in a few months. It may also issue convertible dividend warrants redeemable in few years.

vii) Liquidating Dividends:

When the Board of Directors wishes to return the capital originally contributed by shareholders as a dividend, it is called a liquidating dividend, and may be a precursor to shutting down of the business. The accounting for a liquidating dividend is like the entries for a cash dividend, except that the funds are considered to come from the additional paid-in capital account.

13.3 FACTORS AFFECTING DIVIDEND DECISIONS

The factors affecting dividend policy can be grouped into two broad categories; (i) *Ownership considerations* and (ii) *Firm-oriented considerations*

i) Ownership Considerations:

Where the ownership is concentrated in few people, there are no problems in identifying ownership interests. However, where ownership is largely spread on a wide spectrum, the identification of their interests becomes difficult. Further, the influence of stockholders' interests on dividend decision becomes uncertain because: (a) the status or preferences of stockholders relating to their position, capital gains, current income, etc. can not be precisely ascertained; and (b) a conflict in shareholders' interests may arise. In spite of these difficulties, efforts should be made to ascertain the following interests of shareholders to encourage market acceptance of the stock:

- Current income requirements of stockholders

- Alternative use of funds in the hands of stockholders
- Tax matters affecting stockholders

Since different groups of shareholders may have various desires and objectives, understandably, investors gravitate to those companies that combine the mix of growth and desired dividends. Since companies generally do not have a singular group of shareholders, the objective of the maximisation of the market value of shares requires that the dividend policy be geared to investors in general.

ii) Firm-oriented Considerations:

The ownership interests alone may not determine the dividend policy. A firm's needs are also an important consideration, which include the following:

- a) Contractual and legal restrictions
- b) Liquidity, credit-standing and working capital needs
- c) Dividends Decisions
- d) Need of funds for immediate/future expansion.
- e) Availability of external capital
- f) Risk of losing control of organisation.
- g) Relative cost of external funds
- h) Business cycles
- i) Post dividend policies and stockholder relationships.

13.4 DETERMINANTS OF DIVIDEND POLICY

The dividend policy determines the distribution of earnings available to shareholders or earnings per share between dividend payment and retention. The earnings per share is equal to dividend per share plus retention per share. This break up must be carefully decided keeping in view of several various factors, which are divided into external and internal factors discussed below:

13.4.1 External Factors

The external factors are those factors which are uncontrollable and cannot be influenced by decisions of the Management of the Company. The Finance Manager has to adopt his policies whenever there is a change in these factors.

- i) State of the Economy:** The general state of the economy in which the company operates has a great impact on dividend policy. If the economy is passing through boom or prosperity all the businesses will be expanding showing good financial results. Market price of shares rises rapidly. Companies need funds for expansion or diversification and therefore many prefer to retain profits instead of approaching the capital market for funds. During the recession, business face problems of contracting sales, mounting inventories, decreasing profits, etc. If the recession persists, businesses must cut-down the production capacities. The market price of the companies continues to fall and the companies

must make a logical balance between dividends and retentions to stabilise the market price.

- ii) **State of the Capital Market:** This is related to a company's access to the capital market. If the capital market is overwhelmingly in favour of equity issue, then the companies may adopt liberal dividend policy. At times, when funds are required, companies access the capital market instead of generating internal funds through retention.
- iii) **Tax Policy:** If the dividends are taxable in the hands of the shareholders (as is the present case) shareholders in the highest tax bracket would prefer not to receive dividends, instead they would prefer to accrue the gains through capital gains which are taxed at lower rates. But at the same time shareholders in lower tax brackets or out of tax system would prefer dividends.
- iv) **Inflation:** Inflation is also a factor, which may affect a firm's dividend decision. During the inflation, funds generated from depreciation may not be adequate to replace worn-out equipment. Under these circumstances, the firm must depend on the retained earnings as a source of funds to make up for the shortfall. On account of inflation often the profits of most of the companies are inflated. A higher payout ratio based on overstated profits may eventually lead to the liquidation of the company. Inflation has another dimension. In an inflationary situation, current income becomes more important and shareholders in general attach more value to current yield than to distant capital appreciation. They would thus expect a higher payout ratio.
- v) **Requirements of Institutional Investors:** The dividend policy of a company is affected by the requirements of institutional investors, such as financial institutions, banks, insurance companies, mutual funds, etc. These investors usually favour a policy of regular payment of dividends.

13.4.2 Internal Factors

Internal factors are the factors that are within the control of the company. Companies can make changes in these factors and can design their dividend policy. Some these factors are:

- i) **Nature of Business:** Any business enterprise engaged in the production with steady demand can follow a liberal dividend policy. There are various factors which are controllable by the companies with seasonal variations or cyclical variations in the demand for their product. These companies can not follow liberal dividend policy. They adopt a cautious approach, which is an important determinant of the dividend policy of a company. The business firms with unstable earnings adopt dividend policies, which are different from those of steady earnings. The consumer goods industries usually suffer less from uncertainties of income and therefore, pay dividends with greater regularity than the capital goods industries.

The public utilities may be able to establish a relatively fixed dividend rate. The mining companies, on the other hand, with long gestation

period and multiplicity of hazards, may not be able to declare dividends for years. But once they get established, they might afford to make liberal dividend payments. If earnings fluctuate and losses are caused during depression, the continued payment of dividends may become a risky proposition. A healthy company with an eye on future, follows a somewhat cautious policy and build up reserves. A company which believes in publicity gimmicks may follow a more liberal dividend policy to its future detriment. A firm with a heavy program of investment in research and development would see to it that adequate reserves are built up for the purpose.

- ii) Composition of the Shareholders:** The composition of shareholders influences current income requirements of shareholders. If the shareholders belong to low-income brackets or retired persons, the expectation for a regular dividend will be more, which influences the dividend policy. There may be marked variations in dividend policies on account of the variations in the composition of the shareholding. In the case of a closely held company, the personal objectives of the directors and of most of the shareholders may govern the decision. The widely held companies have scattered shareholders and such companies may take the dividend decision with a greater sense of responsibility by adopting a more formal and scientific approach.

The tax burden on business corporations is a determining factor in formulation of their dividend policies. The Directors of a closely held company may take into consideration the effect of dividends upon the tax position of their important shareholders. Those in the high-income brackets may be willing to sacrifice additional income in the form of dividends in favour of appreciation in the value of shares and capital gains. However, when the stock is widely held, stockholders are enthusiastic about collecting their dividends regularly, and do not attach much importance to tax considerations. Thus, a company, which is closely held by a few shareholders in the high income-tax brackets, is likely to payout a relatively low dividend. The shareholders in such a company are interested in taking their income in the form of capital gains rather than in the form of dividends, which are subject to higher personal income taxes. On the other hand, the shareholders of a large and widely held company may be interested in high dividend payout.

- iii) Alternative Uses of Funds:** If the shareholders have alternative uses of the funds, they will prefer the company to declare dividends so that they can invest the dividend amount in alternative opportunities. Many companies retain the earnings to facilitate planned expansion. The companies with low credit rating may feel that they may not be able to sell their securities for raising necessary finance they would need for future expansion. Hence, they may adopt a policy for retaining larger portion of earnings.

In the context of opportunities for expansion and growth, it is wise to adopt a conservative dividend policy if the cost of capital involved in external financing is greater than the cost of internally generated funds.

Similarly, if a company has lucrative opportunities for investing its funds and can earn a rate, which is higher than its cost of capital, it may adopt a conservative dividend policy.

- iv) **Control:** If a company adopts a liberal dividend policy, it may have to access the capital market through a fresh issue of shares. This may dilute the control of the existing shareholders, as the proportion of their shareholding decreases with every fresh issue of shares. If the existing shareholders do not like to dilute their control, they would prefer low dividend payout. The attitude of the Management affects the dividend policies of a corporation in another way. The stockholders, who control the management of the company, may be interested in 'empire-building'. They may consider ploughing back of earnings as the most effective technique for achieving their objectives of building up the corporation.
- v) **Desire for Liquid Funds:** The dividend policy of a company is influenced by a company's need for liquid funds for meeting working capital requirement. It depends upon the credit standing of a company, which may desire to build up reserves by retaining their earnings. Therefore, business firms may consider it necessary to conserve their cash resources to face future emergencies. Cash credit limits, working capital needs, capital expenditure commitments, repayment of long-term debt, etc., influence the dividend decision. Companies sometimes prune the dividends when their liquidity declines.
- vi) **Other Factors :** Age of the company has some effect on the dividend decision. The well-established companies often find it easier to distribute earnings without causing an adverse effect on the financial position of the company than a comparatively younger ones, which are yet to establish themselves. The demand for capital expenditure, money supply, etc., undergo great oscillations during the different stages of a business cycle. As a result, dividend policies may fluctuate from time to time. In many instances, dividend policies result from tradition, ignorance, and indifference rather than from considered judgement. An industry or a company may have established some 'satisfactory standard' for the payment of dividends; and this standard becomes a convention or custom for that industry or company.

13.5 TYPES OF DIVIDEND POLICIES

The objective of Management of any company usually is the maximisation of the market value of the enterprise, i.e., its wealth. The market value of common stock of a company is influenced by its policy regarding allocation of net earnings into 'plough back' and 'payout'. While maximising the market value of shares, the dividend policy should be so oriented as to satisfy the interests of the existing shareholders as well as to attract the potential investors. Thus, the aim should be to maximise the present value of future dividends and the appreciation in the market price of shares. In the previous section of this Unit, we have discussed the various factors that influence the dividend policy of a company.

Goals of Dividend Policy

There are several factors, which influence the determination of the dividend policy. As such no two companies may follow exactly similar dividend policies. The dividend policy must be tailored to the circumstances of the company.

However, the following aspects have general applicability:

- Dividend policy should be analysed in terms of its effect on the value of the company. Dividend, investment, and financing decisions are interdependent and there is often a trade-off.
- Dividend decision should not be treated as a short-run residual decision because variability of annual earnings may cause even a zero dividend in a particular year. This may have serious repercussions for the company and may result in the delisting of its shares for the purpose of dealing on any approved stock exchange.
- Whatever dividend policy is adopted by the company, the general principles guiding the dividend policy should, as far as possible, be communicated clearly to investors who may then take their decisions in terms of their own preferences and needs.
- Erratic and frequent changes in dividends should be avoided, because the reduction in the rate of dividend is a painful thing for the shareholders to bear. The management will find it hard to convince the shareholders the desirability of a lower dividend for the sake of preserving their future interests.

Dividend Policy Options:

The dividend policy refers to the policy that the Management formulates with respect to earnings for distribution as dividend among shareholders. It is not merely concerned with dividends to be paid in one year but is concerned with the continuous course of action to be followed over a period of several years. Therefore, dividend decision involves dealing with several questions, such as:

- Whether dividend should be paid right from the initial year of operation, i.e., regular dividends.
- Whether equal amount or a fixed percentage of dividend be paid every year, irrespective of the quantum of earnings as in case of preference shares, i.e., stable dividends.
- Whether a fixed percentage of total earnings be paid as dividend, which would mean varying amount of dividend per share every year, depending on the quantum of earnings and the number of ordinary shares in that year, i.e., a fixed payout ratio.

Various dividend policies followed by the companies are explained hereunder.

13.5.1 Stable Rupee Dividend Policy

The payment of a fixed amount per share as dividend is one of the dividend policies followed by companies. This payment is not influenced by the companies' earnings. The variations in earnings will have no influence on dividend. This policy is simple and easy to follow when the company's earnings are stable and steady. But if the earnings fluctuate widely, it is difficult to maintain fixed rupee dividend or fixed rate on paid-up capital.

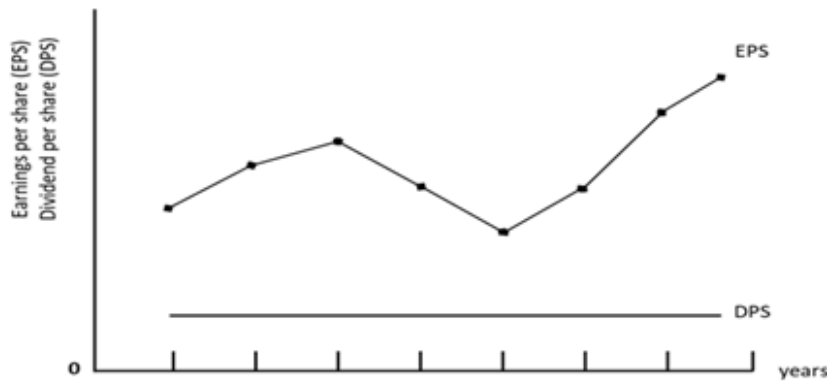


Figure-13.1 Stable Rupee Dividend Policy

13.5.2 Incremental Dividend Policy

As per this policy, the shareholders expect a growth in the dividends they receive. This policy also does not have any relationship to the earnings per share. This policy is suitable in case of companies, which experience a steady progression in its earnings. But the companies experiencing wide fluctuations in their earnings find it difficult to adopt this policy.

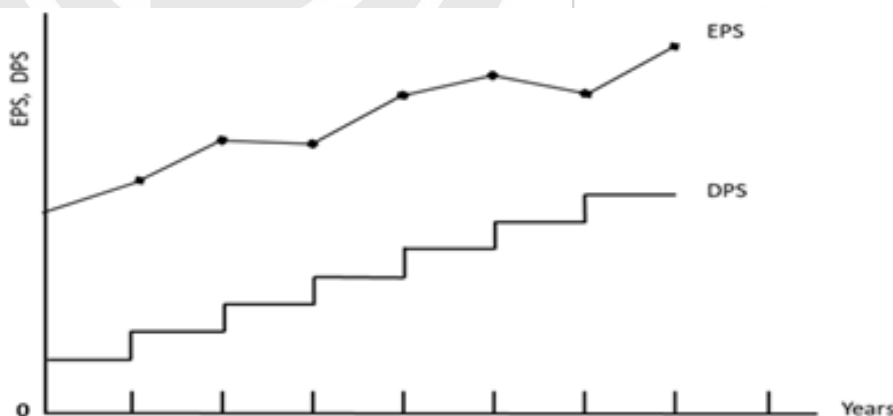


Figure-13.2: Stable Rupee Dividend Policy

13.5.3 Stable Dividend Payout Ratio Policy

The dividend payout ratio is the ratio of dividends to earnings. Under this policy dividends fluctuate with earnings. Some companies follow the policy of constant payout ratio which is a fixed percentage of earnings. Suppose a company decides to pay 40% of the earnings as dividend every year. In a year

when the earnings per share are Rs. 4, dividend per share would be Rs. 1.60. and in another year when EPS is Rs. 5, DPS would be Rs. 2. This is calculated as:

$$\text{Payout Ratio} = \frac{\text{Dividends Per Share (DPS)}}{\text{Earnings Per Share (EPS)}}$$

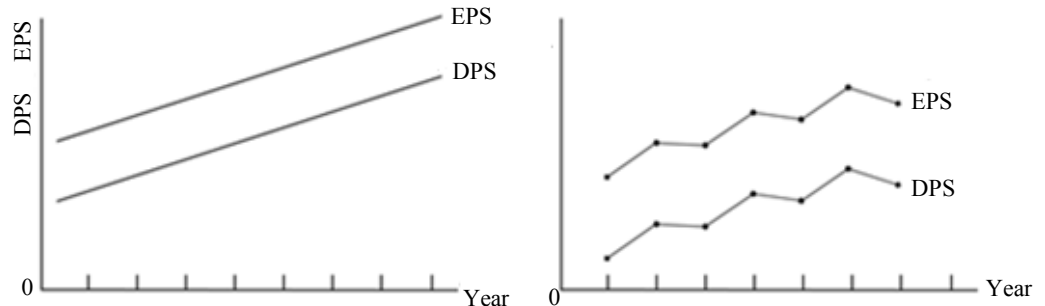


Figure-13.3 (a) Stable dividend payout ratio

Figure-13.3 (b) Stable dividend payout ratio

This policy does not put pressure on companies when they incur losses. The dividend will be paid only when there are profits. This policy automatically decides the retention policy of the company. If 40% is the payout ratio, remaining 60% is the retention ratio.

13.5.4 Residual Dividend Policy

The residual dividend policy supports the dividend irrelevance theory. The dividend policy is influenced by both investment opportunities and availability of funds to finance these opportunities. This dividend policy is called residual because a company first determines the capital budgeting decision and the amount of capital required to finance the project (financing decision) and then decides the amount of dividend paid (dividend decision) based-on the remaining earnings. The company follows the following steps in the residual dividend policy: The usual steps followed in the dividends declaration process under this Policy are:

- i) determination of optimum capital budget.
- ii) assessment of capital required to finance that budget
- iii) use retained earnings to the extent possible to finance the project.
- iv) payment of dividend only if more earnings are available than needed.

The dividends are merely a residual remaining after all equity investments needs are satisfied. The residual dividend policy may be: (i) pure residual dividend policy (or) (ii) smoothed residual dividend policy.

- i) **Pure Residual Dividend Policy:** The pure residual dividend policy requires a company to distribute by way of dividends whatever earnings remain after meeting the equity requirement of the capital budget. Under this policy whenever there is a change in the earnings or capital requirement, dividend amount also changes. More fluctuations in the

dividend may not be liked by majority of the shareholders since shareholders expect stable dividend with growth.

The following example explains the pure residual dividend policy:

Table-13.1 Pure Residual dividend policy

(Rs. in crores)

Period	1	2	3	4	5	6	7	Total
Earnings	150	190	140	220	280	250	290	1520
Capital budget	140	160	180	200	220	260	270	1430
Equity investment	70	80	90	100	110	130	135	715
Pure Residual Dividend	80	110	50	120	170	120	155	805

In period 1, when earnings were Rs 150 crores the capital budget was to be a tune of Rs. 140 crores. Out of the total capital budget equity contribution is 50 per cent, i.e., Rs. 70. After meeting equity investment, the earnings left are Rs. 80 crores. These residual earnings are declared as dividends. If this policy is adopted dividends fluctuate, you can observe that in period-I dividends are 80 crores, in period-2 Rs. 110 crores and in period-3 Rs. 50 crores and so on.

- ii) **Smoothed Residual Dividend policy:** The smoothed residual dividend policy is more appropriate in which case dividends will show a steady progression. It is a combination of pure residual dividend policy and principle of steady change. Under this policy, dividends are gradually changed over a period.

Table-13.2: Smoothed Residual Dividend Policy

Period	1	2	3	4	5	6	7	Total
Earnings	150	190	140	220	280	250	290	1520
Capital budget	140	160	180	200	220	260	270	1430
Equity investment	70	80	90	100	110	130	135	715
Smoothed Residual Dividend	85	95	105	115	125	135	145	805

Table-13.2 gives the data on smoothed residual dividend policy of a firm. In this case the amount of dividend steadily rose from Rs. 85 crores to Rs 145 crores irrespective of growth or no growth in the earnings. This method is best suited in the world of uncertainty where earnings are erratic, and shareholders expect steady dividends.

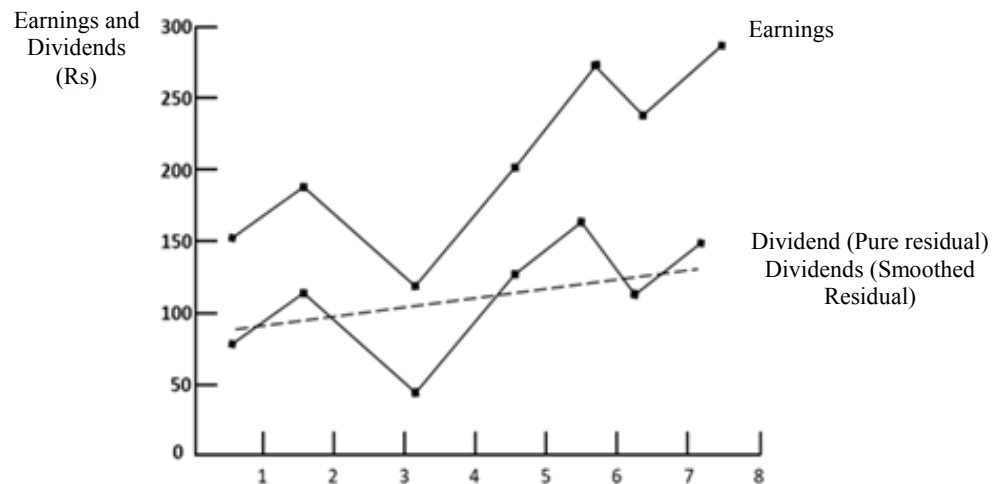


Figure-13.4: Residual Dividend Policy

According to Lintner's survey of corporate dividend behaviour, most of the companies think in terms of the proportion of earnings that should be paid out as dividends rather than in terms of the proportion of earnings that should be ploughed back; and companies try to reach the target payout ratio gradually over a period of time, because shareholders prefer a steady progression in dividends.

Thus, the dividend decision is an important means by which information about the prospects of a company are conveyed. Dividend policy should also resolve uncertainty and improve shareholders confidence, so that the market price of share stabilises and grows steadily.

13.6 SUMMARY

The dividend is a portion of the profits distributed to shareholders in a company and is usually expressed as a percentage of nominal value of shares. Dividends are often paid in cash, though in theory other forms also exist. The dividend policy involves the decisions whether to retain earnings in the firm for capital investment and other purposes, or to payout the earnings in the form of cash dividend to shareholders. There are many financial managers who believe that a stable dividend policy with a certain percentage on paid-up capital and with periodic increases is a better course to follow. Besides being psychologically appealing, stable dividend also has an information content in that. It indicates to investors the management's expectation on levels of long- run earnings and growth.

Often the company has to strike a balance between its own needs for funds for financing growth opportunities and the needs and expectations of the investors. In view of this, therefore, dividend policy can not or should not be regarded as a residual policy. While it is true that companies with strong investment opportunities have relatively low dividend payout ratio and vice versa, most financial managers like to follow a stable dividend policy. There are several factors which impinge upon the dividend decision. The attitude and objectives of management, nature of business, composition of shareholdings, cash position, and future needs for funds are some of the

13.7 KEY WORDS

Capital Gain: It is a gain arises on transfer (or selling) of a capital asset due to appreciation in its market value. Under the Indian Income Tax Act, a capital asset must be held for a minimum of three years in order that it gives rise to a capital gain to its owner.

Bonus Shares: These are issued by a company free of charge to its existing shareholders in proportion to the shares held by them. Bonus shares are issued when a company wishes to increase its capital by using its retained profits (or free reserves) and feels that its existing share capital does not give a true picture of the amount of capital employed in the firm.

Stock Dividend: It is a dividend payment to shareholders that is made in shares rather than as cash. The stock dividend has the advantage of rewarding shareholders without reducing the company's cash balance, although it can dilute earnings per share.

Stock Split: It is a decision to increase the number of shares that are outstanding by issuing more shares to current shareholders.

Reverse Split: A reverse split or reverse stock split is a process by which shares of corporate stock are effectively merged to form a smaller number of proportionally more valuable shares. A reverse stock split is also called a stock merge.

Dividend Policy: A dividend policy is the policy a company uses to structure its dividend payout to shareholders.

Earnings per Share: It is calculated as a company's profit divided by the outstanding number of shares of its common stock. It is an important financial measure, which indicates the profitability of a company.

Dividend per Share: It is the sum of declared dividends issued by a company for every ordinary share outstanding, calculated by dividing the total dividends paid out by a business, including interim dividends usually per year with the number of shares the company is holding.

Dividend Payout Ratio: It is the percentage of earnings paid to shareholders in dividends. It is sometimes simply referred to as the 'payout ratio'.

Retention Ratio: Percentage of net income that is retained to grow the business, rather than being paid out as dividends. It is the opposite of the payout ratio, which measures the percentage of profit paid out to shareholders as dividends.

13.8 SELF ASSESSMENT QUESTIONS/ EXERCISES

1. What is dividend and why is dividend decision important?
2. "While formulating a dividend policy the management has to reconcile its own needs for funds with the expectations of shareholders". Explain

the statement.

3. What policy goals might be considered by Management in taking a decision on dividends?
4. Discuss the factors that should be taken into consideration before finalising a company's dividend policy.
5. What is a residual dividend policy? Discuss various forms of residual dividend policy.
6. What is stable dividend policy? Explain its merits and demerits.
7. Write short notes on:
 - a) Stock dividend (b) Stock Split (c) Stock repurchase (d) Tax considerations of dividend policy (e) influence of recession on dividend policy

13.9 FURTHER READINGS

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BLOCK-5

EMERGING ISSUES IN FINANCE

Unit 14 Behavioural Finance

Unit 15 Financial Restructuring



UNIT 14 BEHAVIOURAL FINANCE

Objectives:

After studying this unit, you will be able to:

- Explain the meaning and concept of Behavioural Finance
- Discuss the characteristics of Behavioural Finance
- Describe the various Behavioural Biases and their impact on Investor Behaviour
- Appreciate the Behavioural considerations for Investors

Structure:

- 14.1 Introduction
- 14.2 Scope of Behavioural Finance
- 14.3 Characteristics of Behavioural Finance
 - 14.3.1 Behavioural Considerations
 - 14.3.2 Applications of Behavioural Finance
- 14.4 Branches of Finance
- 14.5 Financial Theories
- 14.6 Traditional Vs. Behavioural Finance
- 14.7 Behavioural Finance: Science or Art
- 14.8 Behavioural Finance in the Stock Market
- 14.9 Decision Making Errors and Biases
- 14.10 Heuristics and Biases of Behavioural Finance
- 14.11 Quantitative Behavioural Finance Techniques
- 14.12 Summary
- 14.13 Key Words
- 14.14 Self Assessment Questions
- 14.15 Further Readings

14.1 INTRODUCTION

Traditional Finance, as developed and enriched by several economists, has dominated the subject of finance since the mid-1950s. The main premise of the traditional finance model is that individuals are rational. As a result, investors act rationally, and the stock and bond markets are efficient. Financial economists assumed that people (investors) act rationally when making financial decisions, whereas, psychologists have discovered that economic decisions are made irrationally, challenging this premise of traditional finance. Investors can make poor financial judgments because of cognitive mistakes and severe emotional bias, resulting in irrational behaviour. The study of behavioural finance has expanded over the last few decades to investigate how personal and social psychology influence

financial decisions and investor behaviour in general.

Psychologists and sociologists have challenged orthodox finance and economics ideas for decades, claiming that humans are not rational utility-maximizing actors and that the markets are inefficient in the actual world. The subject of behavioural economics evolved in the late 1970s to address these challenges, amassing a large body of evidence of people acting "irrationally" regularly. Thus, it is a concept developed with the inputs taken from the field of psychology and finance, which tries to understand various puzzling observations in stock markets with better explanations. It is a field of finance that proposes psychology-based theories to explain the underlying dynamics of assets buying and selling behaviour.

Meaning of Behavioural Finance:

The study of the influence of psychological processes on the behaviour of financial practitioners and the effect on the market is known as behavioural finance. Investors' market behaviour, according to behavioural finance, is based on psychological decision-making concepts that explain why people purchase and sell certain class of assets. Behavioural finance is concerned with how investors interpret and act on data to make financial decisions.

Further, behavioural finance emphasises investor behaviour, which leads to a variety of market anomalies. ***The study of investors' psychology when making financial decisions is known as behavioural finance.*** Due to the use of emotions in financial decision-making, investors fall prey to their own and occasionally others' blunders. Therefore, it is the study of the effects of psychology on investors and financial markets. ***It focuses on explaining why investors often appear to lack self-control, act against their own best interest, and make decisions based on personal biases instead of facts.***

Definitions:

The behavioural aspects that are taken into consideration while making decisions are varied. It is based on two concepts; cognitive psychology, and limits of arbitrage. Different authors have tried to put this theory in their own words. Some of the definitions as given by different authors are:

Sewell defined behavioural finance as "the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets".

Shefrin defined Behavioural Finance as it is the application of psychology to financial behaviour – the behaviour of investment practitioners." He considers behavioural finance as a rapidly growing area that deals with the influence of psychology on the behaviour of financial practitioners.

Lintner G opined that Behavioural finance is a study of humans interpreting and acts, on information, to make informed investment decisions. Another author Olsen R. asserts that behavioural finance seeks to understand and predict systematic financial market implications of the psychological decision process.

Glaser et. al. considered Behavioural finance as a subdiscipline of behavioural economics, incorporating findings from psychology and sociology into its theories. Further, they consider that the behavioural finance models are usually developed to explain investor behaviour or market anomalies whereas rational models provide no sufficient explanations for it.

Belsky and Gilovich referred to Behavioural finance as behavioural economics by They further defined behavioural economics as combining the twin discipline of psychology and economics to explain why and how people make seemingly irrational decisions when they save, invest, spend, and borrow money.

W. Forbes felt that Behavioural Finance is considered as science how psychology influences the financial market. This view emphasizes that the individuals are affected by psychological factors like cognitive biases in their decision-making, rather than being rational and wealth maximizing.

M. Sewell has stated that behavioural finance challenges the theory of market efficiency by providing insights into why and how the market can be inefficient due to irrationality in human behaviour.

M. Schindler tried to explain it by giving certain examples like - Investors' biases when making decisions and thus letting their choices be influenced by optimism, overconfidence, and conservatism. It further states that experience and heuristics help in making complex decisions.

Thus, behavioural finance is defined as the field of finance that proposes psychological based theories to explain asset market anomalies. Within behavioural finance, it is assumed that the information structure and the characteristics of market participants systematically influence individuals' investment decisions as well as market outcomes.

14.2 SCOPE OF BEHAVIOURAL FINANCE

Behavioural finance is an area of study focused on how psychological influences can affect market outcomes. It can be analysed to understand different outcomes across a variety of sectors and industries. One of the key aspects of behavioural finance studies is the influence of psychological biases. The following areas of behavioural finance are discussed:

- a) **To understand the reasons for market anomalies:** Even while normal finance theories can explain the stock market to a large extent, there are still numerous market oddities, such as the emergence of bubbles, the effect of any event, the calendar effect on stock market activity, and so on. Standard finance leaves many market abnormalities unsolved, whereas behavioural finance offers explanations and solutions to a variety of market irregularities.
- b) **To identify investor's personality:** An in-depth look at behavioural finance can aid in recognising the many types of investor personalities. Various new financial instruments can be devised to hedge the unwanted biases caused in the financial markets once the biases of the investor's

behaviours are detected through the study of the investor's personality.

- c) ***To enhance the skill set of investment advisors:*** This can be done by providing a better understanding of the investor's goals, maintaining a systematic approach to advice, earning the expected return, and maintaining a win-win situation for both the client and the advisor.
- d) ***Helps to identify the risks and develop hedging strategies:*** Because of various anomalies in the stock markets, investments these days are not only exposed to the identified risks but also the uncertainty of the returns.

Thus, behavioural finance explains various corporate activities.

14.3 CHARACTERISTICS OF BEHAVIOURAL FINANCE

Behavioural finance is typically characterised by the following key features:

- i) ***Framing:*** the decision-makers perception about a problem and its possible outcomes is what is referred to as the decision frame. It is affected by the presentation, person's characteristics, and perception about the question despite the fact remaining the same. Psychologists refer to it as 'frame dependence' behaviour. Though the objective fact remains constant the market participants are subject to context-sensitivity, simply failing to see how questions are asked. In stock markets, framing has to a great extent affected the choices of participants adversely.
- ii) ***Heuristics:*** it refers to a process by which people find out things for themselves, developing 'rules of thumb'. This often leads to other errors. Heuristics can also be defined as the "use of experience and practical efforts to answer questions or to improve performance". The irrational way markets act at times can be explained with the help of heuristics. Interpretation of new information requires identification and understanding of all heuristics that affect financial decision making. Some of these are anchoring, representativeness, conservatism, etc.
- iii) ***Emotions:*** most human decisions are driven by human needs, desires, fear, fantasies, etc. The term 'animal spirit' given by John Keynes's indicates the inner urge of market participants to engage in more investment and consumption. Emotions have a very important role in explaining investor choices, which thereby shape the financial markets. The psychological reality that affects investment decisions is determined by our emotions. Most of the times emotions are the main reason for people not making a rational choice.
- iv) ***Impact on Market:*** Behavioural Finance believes that market prices do not appear to be fair. According to standard finance market prices will not be affected by investor mistakes, because if there were a variation in price from fundamental value rational investors would exploit this opportunity for their profits. The other limiting factor is arbitrage. Thus,

there exists a possibility that correlated cognitive errors of investors can affect market prices.

Behavioural Considerations:

There are certain points that an investor should consider while investing like:

- i) **Biases and heuristics apply to all:** Human beings are usually imperfect, as psychological, and emotional biases like overconfidence, anchoring, representativeness, etc., are present in most of us. Better awareness about how to control our emotional responses will not only let us get rid of those but will also increase the awareness of investors at the time of investing.
- ii) **Limitation of knowing:** There is a tendency among people to think that the forecast made by them are increasing in accuracy with the increase of information. The quantum of information is not important rather what you do with it matters. One should not get paralysed by the overload of information and not confuse familiarity with knowledge.
- iii) **Focus on Facts:** Asset prices should be judged on facts and not on their prices. Market participants should tune out investor noise and should focus on hard facts. One must think in terms of enterprise value and not stock price.
- iv) **Overcoming Loss Aversion:** An important quality that market participants can have is to sell-off his/her mistakes (loss-making investments) and move on without coming back the same way the person has made a loss. Investors should examine their mistakes as it is not always due to bad luck. One should admit one's mistakes and learn from them but do not preoccupy the mind with them.
- v) **Information not to be taken at face value:** One should think carefully about how the information is being presented, because even easy to recall events are less likely, so investors should avoid projecting the immediate events into the future. Market participants should not strongly hold on to historical perceptions or irrelevant data, avoiding seeing patterns in the market that don't exist.
- vi) **Don't allow emotions to control you:** It is important to be aware of the inherent limitations of the human mind and behaviour. Investors need to be aware of strong group psychological behaviours like herd investing and mental accounting which usually don't seem to be good investment strategies. One should not be afraid of making an incorrect investment decision and feeling stupid: it was very simple that you didn't know it anyway just happened.
- vii) **Know Investment Horizon:** No market participant should try to become rich quickly. Investors should go for investments in stocks rather than options, forgetting a leverage-based investment strategy. Investors must diversify their portfolios and trading could be minimized. Targets for buying and selling are to be set and adhered to.

Applications of Behavioural Finance:

Capital Asset Pricing Model (CAPM) and the Efficient Market Hypothesis (EMH) are based on rational and logical assumptions. These theories assume that people, for the most part, behave rationally and predictably. Theoretical and empirical evidence suggested that CAPM, EMH, and other rational theories did a respectable and commendable job of predicting and explaining certain events. However, as time went on, academics in both finance and economics started to find anomalies and behaviours that could not be explained by the theories available. While these theories could explain certain 'idealized' events, the real world proved to be a complex place in which market participants often behaved very unpredictably. Thus, people are not always rational, and markets are not always efficient. Behavioural finance explains why individuals do not always make the decisions they are expected to make and why markets do not reliably behave the way as they are expected to behave.

Recent research shows that the average investors make decisions based on emotion, not logic. Most investors buy high on speculation and sell low in panic mode. Behavioural Finance is a new academic discipline that seeks to apply the insights of psychologists to understand the behaviour of both investors and financial markets emerged. It helps us to avoid emotion-driven speculation leading to losses, and thus devises an appropriate wealth management strategy.

Activity-14.1

1. What do you understand by the term 'Behavioural Finance'?

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2. As an investor, what are the behavioural factors you will come across while taking investment decisions?

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14.4 BRANCHES OF FINANCE

Finance is defined as the management of money and includes activities such as investing, borrowing, lending, budgeting, saving, and forecasting. There are two main types of finance: *(i) standard finance, and (ii) behavioural finance*. Let us discuss each of these in brief.

i) Standard Finance:

Standard or traditional finance refers to the currently recognised theories in academic finance. The contemporary portfolio theory and the efficient market hypothesis are at the heart of mainstream finance. Harry Markowitz developed contemporary portfolio theory in 1952 to explain the *expected return, standard deviation, and correlation* of a stock or portfolio with the other stocks or mutual funds in the portfolio. Any combination of stocks or bonds can be made into an efficient portfolio using these three concepts.

An efficient portfolio is a collection of equities that assumes market risk or, has the least amount of risk for a given expected return. The Efficient Market Hypothesis (EMH) is another major concept in traditional finance. The efficient market hypothesis says that all information has already been represented in a security's price or market value and that the stock or bond's current price is its fair value. Proponents claim that because stocks have reached their fair value, active traders or portfolio managers cannot deliver greater long-term returns that outperform the market. As a result, they argue that rather than seeking to "outperform the market," investors should just own the "entire market." Even with the pre-eminence and success of these theories, behavioural finance has begun to emerge as an alternative to the theories of standard finance.

ii) Behavioural Finance

Standard finance has been the prevailing theory in academic debate for the past four decades. On the other hand, scholars and investment professionals have begun to investigate behavioural finance, an alternative theory of finance. Behavioural finance aims to explain and increase people's understanding of the emotional aspects and psychological processes that affect people who invest in financial markets. Overconfidence, cognitive dissonance, regret theory, and prospect theory are four themes in the field of behavioural finance. These four topics served as an introduction to the numerous distinct themes that have emerged in this discipline over the previous few years.

Behavioural finance encompasses insights from behavioural economics, psychology, and microeconomic theory, and is more than just a discipline of finance. Because of the influence of his or her varied psychological and mental filters, investors frequently struggle to identify the most cost-effective alternative when making financial investments. When an investor seeks financial advice from a broker or a professional, their decisions may be influenced by market information or the

techniques of other brokers or experts.

Behavioural finance assumes that investors are not rational in the real world. When it comes to investing, investors make mistakes. They not only make mistakes, but they make them frequently. Behavioural Finance is a discipline of finance that studies a variety of stock market events and occurrences that occur as a result of human behaviour. Buyers and sellers with diverse perspectives on how prices or asset values will change generate trading platforms called capital markets. Investors make decisions based on their knowledge of asset demand and supply in the market. To put it another way, a market's existence is contingent on what investors, or market participants, think of the assets.

As a result, behavioural finance is the study of investors' and financial markets' psychological influences. It explains why investors often lose control, act against their interests, and make decisions based on personal prejudices rather than facts. Behavioural finance explains how human emotion, biases, and the mind's cognitive limitations in processing and responding to information affect financial decisions, such as investments, payments, risk, and personal debt, and it may be analysed from a variety of viewpoints. Stock market returns are one area of finance where psychological factors have an influence on market outcomes and returns, although there are several other aspects to consider.

The behavioural finance model was proposed by psychologists, but the finance sector was hesitant to adopt their viewpoint. The psychologist Daniel Kahneman and economist Vernon Smith, who were given the Nobel Prize in Economics in 2002, were the first to address behavioural finance. This was the point at which financial economists began to believe that investors act irrationally. Even in financial decisions, the human brain uses shortcuts and emotional filters to interpret information.

Behavioural finance is a word coined by psychologists and economists to represent a concept that integrates the two areas. Its goal is to better understand the several puzzling aspects and anomalies in asset markets to design for better returns and lower the risk. These traits or abnormalities were previously labelled as market anomalies since they could not be explained under the neoclassical framework. To address the growing number and types of market anomalies, a new approach to financial markets called behavioural finance had emerged. The study of the impact of socio-psychological factors on the price of an asset, with a focus on investor behaviour and decision-making, is referred to as behavioural finance.

14.5 FINANCIAL THEORIES

Now, in a nutshell, an attempt is being made to trace the genesis of behavioural finance theories from classical finance theories. For many years, traditional financial theory has assumed that investors are properly informed when making financial decisions. However, the reality, particularly during the previous two decades, indicates that these assumptions are incorrect.

Even if they are well-informed, investors have been shown to engage in illogical behaviour by acting on emotions. Behavioural researchers have expanded their studies in this field as a result of increased awareness of the role of human psychology in investment decisions. As a result, behavioural finance theories were created with this in mind.

To better understand behavioural finance, let us first look at the following traditional finance beliefs:

- Both the market and investors are perfectly rational
- Investors truly care about utilitarian characteristics
- Investors have perfect self-control
- They are not confused by cognitive errors or information processing errors.

Now, let us compare traditional financial theory with behavioural finance. The traits of behavioural finance are:

- Investors are treated as “normal” not “rational” (where normal implies that investors’ decisions are influenced by greed, fear and biases.)
- They have limits to their self-control
- Investors are influenced by their own biases
- Investors make cognitive errors that can lead to wrong decisions.

Behavioural finance is now considered a distinct discipline from "standard finance," which refers to the currently accepted ideas. The Modern Portfolio Theory and the Efficient Market Hypothesis are the foundations of mainstream finance (Helen and Simon, 2000). The three ideas of expected portfolio return, deviation of returns from the expected, and correlation of one stock with the others held in a portfolio are well-known in Modern Portfolio Theory.

Merton Miller and Franco Modigliani's arbitrage principles, Markowitz's portfolio construction principles, Lintner and Sharpe's Capital Asset Pricing Theory (CAPM), and Fischer Black, Scholes, and Merton's option-pricing theory form the foundation of standard finance. To construct a unified theory, these approaches use some basic components. The Modern Portfolio Theory, which treated investors as fully rational decision-making entities, emerged in the 1950s and early 1960s. It was also accepted that the best information about basic values was included in stock prices and that prices varied as a result of excellent and reasonable information.

The modern theory implies that investors make judgments based on anticipated utility theory's norms and principles and that they produce an unbiased forecast about the future. The Efficient Market Hypothesis (EMH) is a finance hypothesis that asserts that the financial price of goods and securities being exchanged is rational and represents all available information. These theories, on the other hand, fail to explain excessive volatility, and several key facts about stock markets, average returns, and individual behaviour are difficult to grasp.

Although CAPM, EMH, and other theories performed admirably in terms of predicting and describing specific events, they struggled to explain anomalies and unpredictable behaviour. Behavioural finance, unlike previous theories, does not assume that purchasers are rational decision-makers or that property or security charges reflect the true or inherent price of each deal. This is a study of the effects of psychology on buyers and financial markets. It also argues that humans, including consumers, have emotions such as fear, hope, and greed. As a result, it focuses on understanding why customers commonly appear to lack self-control, behave against their own best interests, and make decisions based solely on personal prejudices rather than facts. To put it another way, it's a financial add-on paradigm that incorporates behavioural components into the decision-making process.

14.6 TRADITIONAL Vs. BEHAVIOURAL FINANCE

Now let's look at how Behavioural Finance varies from Conventional Finance. The rise of behavioural finance has opened up new avenues for studying how investors make decisions based on psychological considerations, as well as new grounds for challenging traditional ways of modelling investor behaviour. This field aims to explain how investors' cognitive errors and emotions affect their decision-making. As a result, it differs significantly from traditional finance. The following are the main distinctions between traditional finance and behavioural finance:

Traditional Finance	Behavioural Finance
It is based on the arbitrage principles of Miller and Modigliani, the portfolio principle of Markowitz, CAPM of Sharpe, Lintner & Black the option theory of Black, Scholes & Merton. Efficient Market Hypothesis.	It is based on the Prospect Theory given by Kahnemann & Tversky.
It depends heavily on quantitative methods.	It depends more on psychological aspects.
It assumes that people process data appropriately and correctly. It believes Investors are rational and markets generate fair prices close to the intrinsic value of the underlying assets.	It believes market participants show irrational behaviour. It recognises that people employ imperfect rules of thumb (heuristics) to process data which leads to biases in their beliefs and predisposes them to commit errors.
Investors' view decisions in terms of risk and returns.	It postulates that perception of risk and return is influenced by how a decision problem is framed. It assumes frame dependence.
As per traditional finance, people are guided by reasons, logic, and	It recognizes that emotions and herd instincts play an important role in

independent judgment.	influencing decisions.
It argues that markets are efficient, implying that the price of each security is an unbiased estimate of its intrinsic value.	Behavioural finance contends that heuristic-driven biases and errors like frame dependence, emotions and social influence often lead to the discrepancy between market price and fundamental value.
EMH view that prices follow a random walk, though prices fluctuate to extremes they are brought back to equilibrium in time.	Views that prices are pushed by investors to unsustainable levels in both directions. Investor optimists are disappointed, and pessimists are surprised. Stock prices are future estimates, a forecast of what investors expect tomorrow's price to be, rather than an estimate of the present value of future payment streams.

14.7 BEHAVIOURAL FINANCE: SCIENCE OR ART

Whether behavioural finance should be considered as a science or not is a matter of definition. Simply said, science is a method of (i) observing, (ii) documenting, (iii) analysing, and (iv) interpreting, any event methodically and scientifically.

Standard finance, which is a methodical and well-designed subject based on many theories, has been the exclusive source of input for the discipline of behavioural finance. Standard finance theories also aid in justifying stock price movements and trends (Fundamental Analysis), market direction (Technical Analysis), and the construction, revision, and evaluation of investor portfolios (Markowitz Model, Sharpe's Performance Index, Treynor's Performance Index, and various portfolio revision formula plans). As a result, behavioural finance can be justified as a science based on this discussion.

Art is a very different discipline than science. In science, we follow the rule of thumb, whereas, in art, we make up our own rules. Art facilitates the application of theoretical principles in the real world. Certain alterations and aberrations in the theories occur while executing basic finance ideas and concepts. These anomalies are caused by the psychological effects of different users.

Behavioural finance focuses on the factors that limit mainstream finance theories, as well as the factors that lead to market anomalies. It also assists investors in better identifying themselves by presenting numerous human personality models. Investors tend to organise their funds once they understand the restrictions and cures of their mental setup better. It offers investors a variety of custom-made solutions to use in their financial planning; therefore it may be justified as a more practical art of finance.

14.8 BEHAVIOURAL FINANCE IN THE STOCK MARKET

The Efficient Market Hypothesis (EMH) states that stock prices in a highly liquid market are efficiently priced to reflect all available information at any one time. Many studies, on the other hand, have uncovered long-term historical events in securities markets that defy the efficient market hypothesis and cannot be captured plausibly in models based on perfect investor rationality. The EMH is based on the assumption that market participants consider all present and future intrinsic and external factors when determining stock prices. Behavioural finance believes that markets are not efficient when studying the stock market. This allows researchers to study how psychological and social factors influence stock purchases and sales.

Understanding and applying behavioural finance biases to stock and other trading market movements can be done daily. Broadly speaking, behavioural finance theories have been used to explain significant market anomalies such as bubbles and deep recessions. Investors and portfolio managers have a vested interest in knowing behavioural finance developments, even if they are not part of EMH. These patterns can be used to analyse market price levels and fluctuations for purposes of speculation and decision-making.

14.9 DECISION MAKING ERRORS AND BIASES

Let's us, now, have a look at some of the behavioural finance buckets or building components. Investors are viewed as "normal" in behavioural finance, yet they are vulnerable to decision-making biases and errors. At least four buckets may be identified when it comes to decision-making biases and errors.



14.1 Diagram –Buckets of Behavioural Finance

- i) **Self-Deception:** The concept of self-deception is a barrier to learning. We tend to ignore the knowledge that we need to make an informed decision when we incorrectly believe we know more than we do.

- ii) **Heuristic Simplification:** Another bucket that we can look into is a heuristic simplification. Information-processing errors are referred to as heuristic simplification.
- iii) **Emotion:** Emotion is another behavioural finance bucket. In behavioural finance, emotion refers to our decision-making based on our current emotional state. Our current attitude may cause us to make decisions that are not based on logic.
- iv) **Social Influence:** The social bucket refers to how our decision-making is influenced by others.

14.10 HEURISTICS AND BIASES OF BEHAVIOURAL FINANCE

The impact of biases is one of the most important parts of behavioural finance research. Biases can be caused by a multitude of factors. When narrowing down on the research or analysis of industry or sector outcomes & results, understanding, and classifying, different forms of behavioural finance biases can be highly useful.

The occurrence of anomalies contradicts modern finance theories that presume rational and logical behaviour, yet the existence of anomalies has played a significant role in the development of behavioural finance. Researchers in cognitive psychology have identified certain inborn human qualities that lead to unreasonable and sub-optimal decisions, which are referred to as behavioural biases or heuristics. Biases refer to how information is processed to make decisions and the preferences that are considered. These biases are ingrained in human psychology and affect all sorts of investors; nevertheless, if these biases and their effects are recognised, it is possible to decrease their impact and learn to work around them.

Cognitive errors, heuristics, mental shortcuts, and emotional biases are examples of these. Biases related to the rigidity of view (cognitive dissonance) such as representativeness, confirmation, conservatism, and so on, as well as biases related to information processing such as anchoring, mental accounting, framing, and so on. Emotional biases include loss aversion, overoptimism, overconfidence, self-attribution, self-control, and home biases. Behavioural finance seeks an understanding of the impact of personal biases on investors. Some of the biases that influence investment decisions of investors are discussed below:

1. Representative
2. Anchoring
3. Overconfidence
4. Loss Aversion
5. Regret Aversion
6. Confirmation
7. Hindsight

8. Herding
9. Mentality Accounting
10. Gambler's Fallacy
11. The Money Illusion
12. Experiential
13. Familiarity

1. ***Representativeness:***

It is one of the most common biases that involve judging things solely based on how they appear, rather than on genuine statistical probability distributions. Investors' proclivity to make decisions based on previous experiences is known as stereotype decision-making. Thus, rather than utilising statistical probabilities, representativeness is the inclination to estimate how likely something is based on how closely it resembles something. For example, investors typically view a company that has performed well over time and has consistently increased profits as a good avenue to park its assets. It is a common misconception that a good company equals a good investment. Many market participants confuse good firms with good stocks.

2. ***Anchoring:***

Anchoring is a decision-making process in which people's quantitative judgments are impacted by suggestions when they are asked to make them. In the financial markets, investors occasionally make decisions based on irrelevant numbers and statistics. An investor uses the high rate of return attained by a stock in the past as a benchmark for projecting the future return on investment in the absence of pertinent information. As a result, big profits become the primary motivator for investing. It explains why investors prefer to give shorter-term trends less weight and instead focus on recent behaviour. Even while anchoring appears to be an improbable phenomenon, it is common in settings where people are engaging with fresh notions.

3. ***Overconfidence:***

This is usually interpreted as an exaggerated sense of one's own abilities. It has to do with a person's overestimation or exaggeration of his or her capacity to complete a task successfully. It is a sort of bias since it might cause a person's values, ideas, beliefs, or abilities to be misjudged. Although self-assurance is a beneficial trait, investors may overestimate their ability to foresee winning investments, ignoring a variety of elements that influence the investment's value. As a result, excessive trading occurs. Males are also more overconfident than females, according to several psychological studies.

Overconfidence and optimism combine causes investors to overestimate the accuracy of their knowledge, undervalue the dangers they confront and exaggerate their capacity to manage events. All of this could lead to an increase in trade volume and speculative bubbles. Overconfidence could explain market overreactions, excess volatility, and speculative

asset pricing. It also clarifies why investment professionals keep portfolios in order to pick winners. People give themselves good ratings because they tend to forget their shortcomings and focus solely on their accomplishments.

4. ***Loss Aversion:***

People, according to Kahneman, Tversky, Shalev, and Rabin, experience more discomfort when they lose than the pleasure associated with a similar gain. It was also discovered that when losses and gains are equivalent, people are more likely to feel the agony of loss than the elation associated with gains. As a result, people prefer to avoid losses rather than achieve benefits, which is why the phrase "loss aversion bias" was coined. When faced with the threat of losing, investors are eager to take risks, but when presented with the prospect of amassing gains, they are less inclined or even unwilling, i.e., risk-averse. Investors tend to sell rising equities too soon and hold on to losing stocks for too long.

Loss aversion occurs when investors place a higher value on the fear of losing money than on the joy of making money. In other words, they are considerably more inclined to prioritise avoiding losses above maximising investment returns. As a result, some investors may desire a greater pay-out to make up for their losses. Even if the risk of an investment is reasonable from a rational standpoint, they may strive to avoid losses altogether if the large pay-out is not expected.

5. ***Regret Aversion:***

It arises from the desire of investors to avoid the pain of regret that may arise due to poor investment decisions. It encourages investors to hold shares that are performing poorly as doing so avoids the recognition of associated loss and bad investment decisions. Investors can reduce their taxable income by realizing capital losses.

6. ***Confirmation:***

Confirmation bias is when investors have a bias toward accepting information that confirms their already-held belief in an investment. If information surfaces, investors accept it readily to confirm that they are correct about their investment decision - even if the information is flawed. The attribution theory tries to find how people come with explanations for the causes of actions and their outcomes. Commonly, people judge others on the way they behave; the moment someone is not behaving properly we tend to believe them as persons of bad character without trying to know the environmental details. What we perceive is not always a true representation of reality, this does not mean that there is something wrong with our senses, but the mind tends to introduce bias while processing certain information and situations.

The impression first created is difficult to change, people usually accept and give importance to information that supports their opinion. This type of selective thinking is referred to as 'Confirmation Bias'. In other words, it represents the tendency of a person to focus on information that confirms his/her pre-existing thought or belief. To overcome this, one

needs to find someone who can act as a “dissenting voice of reasons”, so that one is confronted with a contrary viewpoint to examine. An investor may seek information that supports his/her original opinion about investment, rather than looking out for information that contradicts it.

7. *Hindsight:*

Another common perception bias is hindsight bias which is all about “I knew it was coming”. This kind of bias arises when an individual believes that the event was predictable and obvious, whereas it could not have been reasonably predicted. This can at times result in oversimplification of the causes and effects of the event. It is nothing but a tendency of a person to think that his/her forecasts are better than what they are. In finance, it could be dangerous as investors may tend to remember their success and not failures, further they may believe that investment outcomes are more predictable than they are. Thus, leading to irrational buying and selling of shares, alteration in perception regarding asset allocation and risk exposure. Hindsight bias appears to be prevalent when there are emotional or moral overtones associated with an event. This is true even in the case of an event that is subject to a process of imagination before its outcome is known.

8. *Herding:*

The Herd Instinct is another market phenomenon characterized by a lack of individuality, wherein people act collectively without thinking or having any centralised direction. This term is generally used to describe the behaviour of animals in herds and the behaviour of humans in strikes, sporting events, religious gatherings, etc. The term herd instinct refers to a phenomenon where people join groups and follow the actions of others under the assumption that other individuals have already done their research. It happens due to social pressure (i.e., a natural desire to be accepted by a group) and the common rationale that such a large group could not be wrong. In our society, we observe that people, who meet and communicate with each other regularly, think similarly. It is important to understand its origin so that the plausibility of theories of speculative fluctuations that ascribe price changes to faulty thinking could be judged. In investing world, this term refers to forces that cause unsubstantiated rallies or sell-offs. The investor buys or sells just because others are doing so, this behaviour becomes prominent during financial crises generally associated with the bursting of a bubble.

9. *Mental Accounting:*

Mental accounting refers to the different values a person places on the same amount of money, based on subjective criteria, often with detrimental results. Mental accounting is a concept in the field of behavioural economics. Thus, it is the set of cognitive operations used by the investors to organise, evaluate, and keep track of investment activities. It is the propensity of people to allocate money for specific purposes. By dividing money into different categories, like savings, bonuses, tax refunds, etc. It first captures how outcomes are perceived and experienced, and how decisions are made and subsequently

evaluated. Mental accounting also involves the assignment of activities to specific accounts, this may help in skipping unnecessary spendings thus saving money for the future. There is a danger that individuals may keep ideal cash instead of using it for repayment of debt or investing it.

10. Gambler's Fallacy:

The gambler's fallacy is also known as the "Monte Carlo fallacy". This fallacy rests on the belief that if something happens more frequently than normal over a period, it will happen less frequently in the future or if it is occurring less frequently over a period then it will occur more frequently in the future. This results from the misunderstanding of the probability theory. Investors or traders can easily fall prey to the gambler's fallacy that a stock price rising over a period may fall or previous failures lead to a higher probability of success. For example, some investors think that they should sell their stocks as it has been going up for quite some time and they believe that it may go down in future. They may retain stock, the price of which has been going down on some consecutive trading sessions believing that it is more likely to go up than down in the following trading sessions.

11. The Money Illusion:

In economics and behavioural finance, the money illusion describes the tendency to think of currency in nominal terms rather than in real terms. In other words, humans commonly consider money in terms of its numerical or face value (nominal value) instead of considering it in terms of its real purchasing power (real value). Because modern currencies have no intrinsic value, the real purchasing power of money is the only true (and rational) metric by which it should be judged. Still, humans often struggle to do so because, derived from all the complex underlying value systems in both domestic and international economies, the real value of money is constantly changing. In the financial markets, many average investors commonly ignore the real value of their currency when valuing their investments or interpreting their appreciation, leading to incorrect perceptions of value and past performance.

12. Experiential:

An experiential bias occurs when investors' memory of recent events makes them biased or leads them to believe that the event is far more likely to occur again. For this reason, it is also known as recency bias or availability bias.

13. Familiarity:

The familiarity bias is when investors tend to invest in what they know, such as domestic companies or locally owned investments. As a result, investors are not diversified across multiple sectors and types of investments, which may reduce risk. Investors tend to go with investments that they have a history or have familiarity with.

14.11 QUANTITATIVE BEHAVIOURAL FINANCE TECHNIQUES

Developments in Behavioural Finance

Several developments have taken place since the emergence of behavioural finance. These developments have led to the rise of quantitative behavioural finance, emotional finance, experimental finance and Neurofinance. Behavioural finance is all about what we do. It focuses on the phenomena of how people behave when they are faced with choices. Cognitive finance, on the other hand, look at what is going on within the individual's mind when they make that choice. Here we will discuss some quantitative behavioural finance techniques which use both statistical and mathematical techniques for analysing behavioural biases and studying their effect on financial markets.

i) *Quantitative Behavioural Finance:*

It is a newly emerging discipline that uses mathematical and statistical methods to analyse behavioural biases and how they affect financial markets. A. Moosa and V. Ramaiah Venkateswarlu (2011) describe quantitative behavioural finance as a “new discipline that uses mathematical and statistical methodology to understand behavioural biases in conjunction with valuation”. Thus, it could be seen as a hybrid approach that reconciles behavioural finance and standard finance. Rigorous mathematical treatment of behavioural finance especially the setting of continuous-time portfolio choice gives quite unconventional and challenging features for which the known mathematical techniques almost fall apart. It may be so, as behavioural biases and human behaviour, in general, are not amenable to mathematization. So, it has emerged as a response to the difficulty faced in translating behavioural ideas in terms of asset prices. This research has been picked up by the practitioners.

ii) *Experimental Finance:*

This is a relatively new field that uses experimental methods to study behavioural biases. By setting up trading simulations the behaviour of investors is examined under a variety of conditions, applying various theories to know how these investors react, this data is subsequently used to predict the possible movements of financial prices under different conditions. It allows researchers to isolate one variable at a time studying its cause and effect without using econometric techniques to filter the effect of other variables. However, each component (variable) can be measured as the difference between the values obtained from surveys and the realized value. Experiments in finance are not the same as those in sciences as it involves humans, having emotions and biases, at times prone to telling lies, their empirical studies have no scientific power as natural sciences. Experimental finance thus cannot be precise as an experimental science.

iii) Neuro-finance:

Behavioural finance is based on the prospect theory given by Kahneman and Tversky's. Heuristics and biases were limited in explaining the behaviour of decision-makers in uncertain and risky environments but failed to explain why and how these behaviours occur. This required study of the human brain which processes information, the basis for decision making, leading to a new field called Neurofinance. It uses Functional Magnetic Resonance Imaging (fMRI) scans wherein neuroscientists can identify which brain structures are associated with activities. This technology is related to basic brain processes guiding daily decisions under uncertainty, emotion and social interaction associated with behaviour in financial markets. The purpose of Neurofinance is to understand how investors make decisions considering different kinds of uncertainties related to the environment and model uncertainty. It is a new kind of behavioural finance used to rationalise price patterns that could not be explained by standard finance.

iv) Emotional Finance:

Emotional finance is a discipline that examines how our emotions both conscious and unconscious, play a major role in all financial decisions. In the investment process, there is uncertainty as well as problems in predicting future outcomes which unleash feelings of excitement and anxiety, most theories fail to recognize emotions and their role in the investment process. Markets are viewed as virtual large groups with behaviour reflecting the interaction of the often-unconscious drives, needs and emotions of their participants as they deal with the inherent ambivalence and uncertainty of the investment process.

14.12 SUMMARY

Behavioural finance is a concept that is very important as an instrument of investment measurement all over the world. Moreover, behavioural finance is superior to traditional methods of investment. In this unit, we have tried to explain the concept of behavioural finance and bring forth its importance. Several psychological factors affect the behaviour of market participants like herding behaviour, overconfidence, disposition effect, mental accounting, anchoring, etc. We have discussed some of these biases in brief. These heuristics and biases can explain irrationality among investors and why they show biasness while taking investment decisions and creating a bubble in the stock market. The impact of these biases on investors' behaviour and the market has also been discussed.

14.13 KEY WORDS

Behavioural Finance: It is “the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets”.

Efficient Market Hypothesis (EMH): The theory that prices of securities fully reflect all available information and that all market participants receive

and act on all relevant information as soon as it becomes available.

Modern Portfolio Theory: An inclusive investment approach that assumes that all investors are risk-averse and seeks to create an optimal portfolio in consideration of the relationship between risk and reward as measured by alpha, beta, and R-squared.

Prospect Theory: It can be defined as how investors assess and calculate the chance of a profit or loss in comparison to the perceptible risk of the specific stock or mutual fund.

Regret Theory: The theory of regret states that individuals evaluate their expected reactions to a future event or situation

Representativeness Bias: Representativeness is the tendency to evaluate how likely something is concerning how closely it resembles something rather than using statistical probabilities.

Anchoring: It refers to a decision-making process where persons when asked to make quantitative assessments, their assessments may tend to be influenced by suggestions.

Overconfidence: It is related to overestimation or exaggeration of a person's ability to perform his/her task successfully.

Mental Accounting: It is the set of cognitive operations used by investors to organise, evaluate, and keep track of investment activities.

Gambler's Fallacy: This fallacy rests on the belief that if something happens more frequently than normal over a period, it will happen less frequently in the future or if it is occurring less frequently over some time then it will occur more frequently in the future.

Herding: Herd behaviour happens due to a natural desire to be accepted by a group and the common rationale that such a large group could not be wrong.

14.14 SELF ASSESSMENT QUESTIONS

1. How is Behavioural Finance different from Traditional Finance?
2. Discuss the meaning and concept of Behavioural Finance.
3. Discuss the different emotional biases that affect the decisions of Investors.
4. Explain the various cognitive biases and give the reasons for the irrational behaviour of market participants.
5. What are the developments taking place in behavioural finance? Explain.

14.15 FURTHER READINGS

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UNIT 15 FINANCIAL RESTRUCTURING

Objectives:

The objectives of this unit are to:

- Understand the concepts of Corporate and Financial Restructuring.
- Explain the different methods that are followed by the companies in undertaking Restructuring.
- Elucidate the procedure involved in each of the methods of Financial Restructuring.
- Discuss the merits, demerits, and reasons of each of the options available for Restructuring.
- Discuss the contemporary developments with respect to Financial Restructuring.

Structure:

- 15.1 Introduction
- 15.2 Corporate Restructuring
- 15.3 Financial Restructuring
- 15.4 Methods of Financial Restructuring
- 15.5 Buyback of Shares
- 15.6 Conversion of Debt/Preference Share into Equity
- 15.7 Corporate Debt Restructuring
- 15.8 Leveraged Buyouts
- 15.9 Equity Restructuring
- 15.10 Divestiture
- 15.11 Disinvestment
- 15.12 Changes in the total Corporate Structure
- 15.13 Summary
- 15.14 Key Words
- 15.15 Self Assessment Questions
- 15.16 Further Readings

15.1 INTRODUCTION

Creation and maximization of value (also called wealth) is said to be the objective function of Financial Management. There are diverse ways by which value maximization occurs in a business firm. When the demand for goods and services is growing, firms tend to expand their business capacity and seize the opportunity of increasing demand. This could be done by constructing more production units or opening up of more and more

operational units. Alternatively, expansion of business activity also, could be made possible through the acquisition of other businesses. It is natural to acquire business units of similar nature or producing the same or similar goods and services. Sometimes, companies also expand their size of operations by taking over of unrelated businesses; not having any relation to the present business or businesses carried out. The former is called 'related diversification' and later is known as 'unrelated diversification'. Some of the takeovers that happened in India in the present century are: (1) Mittal Steel taking over of Arcelor Steel, (2) Vodafone and Idea merging into one, (3) Wal-Mart acquiring Flipkart, (4) Tata Steel bought out Corus Steel, and (5) Vodafone acquiring majority stake in Hutch Essar. These are all the examples for related diversification. Companies that are prospering well and that have accumulated cash surpluses venture to diversify into many other areas of business activity as has been done by big business houses in India such as Reliance Industries, Bharti Enterprises, Birla Group, ITC, Adani Group, Videocon Industries, and many others. In all these cases, the main objective is to maximize the value of the individual business firm or the Group. In the broader sense, this is termed as 'Corporate Restructuring'. Let us know about this in much more detail.

15.2 CORPORATE RESTRUCTURING

Corporate Restructuring (CR) is a broader term which includes all other types of restructuring such as; financial restructuring, debt restructuring, capital structure changes and the product mix. There are two basic factors that necessitate Corporate Restructuring in the business world. **First**, when the business wants to expand or diversify its activities, it may opt for restructuring through acquisitions, mergers, takeovers, and joint ventures, etc. This is mainly to maximize the value of the business. **Second**, Corporate Restructuring becomes a necessity, when the business conditions are not favourable or there is recession going on in the economy (as it had happened due to the Covid-19 pandemic), in order to remain in the business, certain actions like disinvestment, downsizing, sell-off the whole or part of the business may be resorted to.

Sometimes due to the heavy pile-up of load and the force of the creditors, a restructuring plan needs to be implemented like the one offered by the Banks and Financial Institutions in the name of 'Corporate Debt Restructuring (CDR). Whatever be the reasons for restructuring, it is resorted to either for maximizing the value of the firm or minimizing the impending loss or unfavorable situation. Many of the turnaround strategies come under this concept. Therefore, Corporate Restructuring can be defined as the sum of actions taken by a business in the process of redefining itself either to pursue value maximization or to keep off the impending decline.

Reasons for Restructuring:

The following can be said to be the major reasons as to why companies/businesses resort to restructuring:

- To seize the expanding business opportunities in the economy. When the

economy is growing, there will be many business opportunities coming in the way of business. Those firms that have the resources or cash surpluses or whose market standing is good may think of taking advantage of the expanding economy.

- Sometimes policy changes brought out by the Governments create new opportunities. Like the Economic Reforms initiated in India under different phases, beginning 1991. The process is still continuing.
- Advancements in technology create new opportunities for business. For example, advances in research in cell biology or stem cell research necessitate the Biotechnology and Pharmaceutical companies to redefine their businesses. If they are not conscious of these developments, they will be out of the scene. Another example could be the Telecommunications sector. Allocation of the spectrum, mobile services would definitely alter the complexion of the business units.
- Corporate Restructuring by some businesses may also be done to gain control over the market or as a measure of strengthening the monopoly power. In this kind of restructuring, the firm would be in a position to dictate the market and other competitors. For example, when mobile technology has come into the scene, there used to be about 15 players in the market. Now there are only three to four major players like Airtel, Vodafone, and Reliance.
- Sometimes, companies resort to organizational changes to improve upon Managerial efficiency. This may be in the nature of creating conglomerates or division of the Group into independent units. Sharing of assets or changes in the ownership, as it happened in the Reliance after the demise of Dhirubhai Ambani, may make it necessary for businesses to go for restructuring.
- Threats from new forms of business establishments also may prompt certain businesses to gain an advantage. A suitable example is the 'Start-up Culture' when the small businesses are encouraged to develop into big and create an 'innovative environment', many enthusiastic individuals floated the Start-up units and many of them flourished too. The corporate world, being sensitive to the development, encouraged many of them to tie up for business development. This can be considered a healthy sign of corporate growth.

Types of Restructuring:

Broadly speaking, the following are the different types of Corporate Restructuring:

- a) **Financial Restructuring:** This involves decisions pertaining to acquisition, mergers, divestitures, leveraged buyout, leveraged recapitalization, reorganization of capital, etc.
- b) **Technological Restructuring:** This involves decisions pertaining to redesigning the business process through revamping existing technologies.

- c) **Market Restructuring:** This involves decisions regarding product mix, market positioning to suit the changed situations.
- d) **Organizational Restructuring:** During the post-liberalization period many Indian firms embarked on organizational restructuring programs through regrouping the existing businesses into a few compact business units through decentralization and delayering, downsizing, outsourcing the non-value adding activities, and subcontracting.

ACTIVITY-15.1:

- a) List out the reasons for Corporate Restructuring. Cite Examples from Indian Experience.

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15.3 FINANCIAL RESTRUCTURING

This is one of the major aspects of Corporate Restructuring. Nonetheless, every restructuring would finally affect the financial profile of the company. Viewed in the larger context, Financial Restructuring is defined as the process of reorganizing the finances of the business unit, in terms of assets and liabilities. It includes the rejig of capitalization, capital structure, cost of capital, debt-equity, Cashflow streams, etc. Any measure intended to improve upon the financial health or condition of the firm can be covered under the Financial Restructuring. In recent times (2020), companies like NIIT, Engineers India, NTPC, Wipro, TCS, ONGC, NMDC, IOC, NALCO, NLC India, HCL Technologies, Pidilite Industries, etc., have offered to buy back their own shares. Similarly, there are many companies now moving towards paying off their debt and making them as zero debt companies and converting them to only Equity Companies. As per one estimate, the top 50 companies of India, have repaid their debt obligations to the extent of Rs.59,600 crore during the first half of 2019-20. The list included companies like India Cements, Saurashtra Cement, Binani Cement, Wockhardt, GTL, Hotel Leela, Hindustan Construction, KS Oils, Jindal Stainless, etc.

15.4 METHODS OF FINANCIAL RESTRUCTURING

As could be noticed from the above discussion, there are many methods of Financial Restructuring. Quoted above are examples of just two of the variants (buyback of shares and repayment of Debt). The following is the list

of such methods, which are presently resorted to by companies in India. Each of these methods is explained in detail.

- Buy back of shares.
- Conversion of Debt/Preference Shares into Equity
- Corporate Debt Restructuring
- Leverages Buyouts
- Equity Restructuring
- Divestiture
- Disinvestment
- Changes in Capital Structure

Let us now discuss each of these methods in detail in the subsequent sections.

15.5 BUYBACK OF SHARES

Buyback of shares is a process by which the company proposed to buy its own shares and thus reduce the number of shares outstanding. Not only the company, but also the shareholders will have an opportunity to exit, if they wish to from the company. The attraction to the shareholders is that a higher price than the price prevailing in the market is offered to them to entice the shareholders. From the company point of view, the following are some of the reasons for considering this option:

- To utilize surplus cash available in the firm.
- To reduce the number of shares and thus improve EPS.
- To increase the shareholding of the promoters to avoid threat of takeover.
- To enhance the return on capital/net worth.
- To boost up confidence among the shareholders in times of declining share prices.
- To create positive signals on the market and thus help rise share prices.

Provisions of Companies Act, 2013:

There are three sections (Sections 68-70) that specify the procedure to be followed by the companies that intend to buy back their own shares.

As per **Section 68** of the Companies Act, 2013 the conditions for Buy-back of shares are:

- Articles of Association must authorise Buyback, otherwise the company has to amend the Articles by passing Special Resolution in General Meeting.
- For buyback we need to pass Special Resolution in General Meeting, but if the buyback is upto 10%, then a Resolution at Board Meeting needs to be passed.
- Maximum amount of Shares that can be bought back in a financial year

is twenty-five percent of paid-up share capital and free reserves (where paid-up share capital includes equity share capital and preference share capital; & free reserves including securities premium).

- Post buyback debt-equity ratio cannot exceed 2:1.
- Only fully paidup shares can be bought back.
- Company must declare its insolvency in Form SH-9 to Registrar of Companies, signed by atleast 2 Directors out of which one must be a Managing Director, if any.
- The notice of the meeting for which the Special Resolution is proposed to be passed shall be accompanied by an explanatory statement stating-
 1. a full and complete disclosure of all the material facts.
 2. the necessity of buyback.
 3. the class of shares intended to be bought back.
 4. the amount proposed to be invested under the buyback.
 5. the time limit for completion of buyback.
- The Company must maintain a Register of buy-back in Form SH-10.
- Submit return of buyback in Form SH-11 Annexed with Compliance Certificate in Form SH-15, Signed by 2 Directors out of which one must be a Managing Director, if any.
- A Company should extinguish and physically destroy shares bought back within 7 days of completion of the buyback.
- Observe 6 months cooling period, i.e., no fresh issue of share is allowed.
- No offer of buyback should be made by a company within a period of one year from the date of the closure of the preceding offer of buyback.
- The buyback should be completed within a period of one year from the date of passing of Special Resolution or Board Resolution, as the case may be.

According to **section 69** of the Companies Act, 2013, where a Company bought back shares out of free reserves or out of the securities premium account, then an amount equal to the nominal value of the shares need to be transferred to the Capital Redemption Reserve Account.

The Capital Redemption Reserve account may be utilized for paying unissued shares of the company to the members as fully paid bonus shares.

According to **section 70** of the Companies Act, 2013, A Company should not buyback its securities or other specified securities, directly or indirectly –

- Through any subsidiary including its own subsidiaries; or
- Through investment or group of investment companies; or
- When company has defaulted in repayment of deposits or interest payable thereon, or in redemption of debentures or preference shares or repayment of any term loan.

- The prohibition is lifted if the default has been remedied and a period of 3 years has elapsed after such default ceased to subsist.
- When company has defaulted in filing of Annual Return, declaration of dividend & financial statement.

Subject to the above provisions, a company can buyback its own shares. Otherwise, it is feared that the entire process leads to manipulation of share prices in the stock market.

Buyback Regulations of SEBI:

Keeping in view the provisions incorporated in the Companies Act, 2013, the Securities and Exchange Board of India (SEBI) has come out with new regulations in 2018, replacing those issued in 1998. The new regulations are titled “SEBI (Buyback of Securities) Regulations, 2018. The main provisions of these Regulations are:

- The most significant aspect of the Regulations pertains to the conditions that must be followed for resorting to buyback. They are as follows:
 - The maximum limit for offering buyback is put at 25% of the paid up capital and free reserves.
 - The debt to equity ratio after buyback should not exceed 2:1.
 - The Equity shares proposed to be boughtback must be fully paid-up.
 - The buyback shall not result in delisting of shares from the Stock Exchanges.
 - The gap between two buyback offers shall be more than one year.
 - The company can use its free reserves, or the premium collected or the proceeds of the issue of share capital for buyback purpose.
 - No company shall directly or indirectly purchase its own shares through its Investment Company or subsidiary.
- The other compliance requirements include:
 - There shall have been a provision in the Articles of Association for buyback.
 - The buyback process should be completed within a period of one year after passing the special resolution to this effect.
 - The company shall make necessary disclosure of the particulars of the activity to the Registrar of Companies, SEBI and the concerned Stock Exchange within the time limits specified.
 - 15% of the number of securities proposed to be bought back or the number of securities as per their share holding, shall be reserved in favour of small shareholders.
 - The company shall make a public announcement of buyback, providing for all the material information.
 - The offer of buyback shall remain open for a period of at least 10 working days.

- The shares proposed to be bought back shall be categorized into two groups:
 - i) Those reserved for small shareholders, and
 - ii) Those meant for general category. The entitlement shall also be calculated accordingly.
- The company shall follow proper procedures for extinguishing and physically destroying the share certificates so bought. It shall take place in the presence of an authorized person.

15.6. CONVERSION OF DEBT/PREFERENCE SHARES INTO EQUITY

Conversion of Debt or preference shares into equity is another method followed by the companies in the process of restructuring their finances. This had been permitted in India, subject to certain guidelines incorporated in the Companies Act, 1956. The same are continued with little modifications in 2013 Act. As per Section – 62 (3) of the Companies Act, 2013, if a company takes a term loan, it can convert the same into share capital and an option shall be given to such lenders and there shall be a special resolution to this effect.

Similarly, there is the provision for conversion of loans into preference shares and preference shares into equity. These ideas have come on to the scene, when the Government of India (through Ministry of Corporate Affairs) permitted the issue of Convertible Debentures and Preference Shares. After the specified period, these securities get converted into equity at the option of the holder, as per the terms agreed at the time of issue. SEBI has issued detailed guidelines for conversion of Debt into Equity under different circumstances of Debt Restructuring, subject to the Guidelines of the RBI in this regard.

15.7 CORPORATE DEBT RESTRUCTURING

Corporate Debt Restructuring (CDR) was a scheme announced by the Government of India through the Union Budget 2002-03 to provide some relief to the borrowers without falling into the category of Non Performing Assets (NPA) as per the guidelines of RBI. Keeping in view the difficulties faced by some genuine borrowers and to keep them outside the purview of BIFR and DRT and other legal proceedings, the RBI announced this scheme. Under this scheme, viable Corporates that are affected by certain internal and external factors in obliging to their payment schedules and also to avoid an impending loss that may occur to the creditors are permitted to restructure their debt, subject to the guidelines issued by the RBI. This scheme is applicable to the loans borrowed by the Corporates from Banks and Financial Institutions.

The following are the *categories of loans eligible for restructuring* under this scheme:

Category-1:

- i) Accounts / Loans classified as 'Standard'.
- ii) Accounts / Loans classified as 'Substandard'.

Category-2:

This category includes Assets / Loans classified as 'Doubtful'. The Corporate Debt Restructuring (CDR) Scheme is not applicable to the following:

- i) Accounts involving only one financial institution or one bank. The scheme will cover only multiple banking accounts / Syndication / Consortium accounts of corporate borrowers with outstanding fund-based and non-fund based exposure above Rs. 10 crores from the banking system.
- ii) Corporates indulging in frauds and malfeasance.
- iii) Willful defaulters.
- iv) Accounts where recovery suits have been filed by the creditors against the company.
- v) Cases of companies those were ready to be referred to BIFR, DRT, and Civil Courts.

However, in the above cases, CDR Core Group may after proper review, recommend cases for consideration on a select basis.

As per the information available (2018), the CDR Cell has approved the restructuring of stressed loans worth Rs.4 trillion, since its introduction (2002). Of these, only about Rs.84, 677 crore worth of loans could be settled through the scheme. About Rs. 1.84 trillion loans exited without solution and the remaining Rs.1.32 trillion proved to be bad loans, not amenable for restructuring.

Impact of CDR on the Banking System:

Debt restructuring has turned out to be an issue of concern for the reason that the amounts involved are leaving an impact on the very stability of the banking industry. Ideally, the granting of CDR decision and sanctioning reliefs to the borrower company is a bilateral decision between the banks and borrower companies. As the prevailing finances of the borrower indicate operational deficiencies and sickness, the banker's decision on CDR and related reliefs to the borrower are valid. From the Banker's point of view, as long as the assistance provided to such borrowers had become substandard / NPA, granting CDR is nurturing the company to become viable and recover with profitability. Further, if the terms and conditions of the loan, especially in relation to repayment are not adhered to after a specified period of time, the account is classified as NPA. If accounts are restructured, then too, the terms and conditions are not fulfilled. But such accounts are not classified as NPA.

From an operation perspective, there can be two types of restructured accounts: the first, those accounts which are restructured and classified as

NPA; the second type are those which are restructured, but the asset classification is retained as standard. In general, an NPA account can be upgraded when the terms and conditions of the loan are fulfilled by the borrower. In the case of Restructured Standard Asset (RSA), the original terms and conditions of assistance are changed. Hence, the issue of the conditions under which the account can be considered as standard or upgraded to the standard category becomes pertinent. Banking Guidelines lay down the broad parameters under which RSA can be treated as a standard. The second type of RSA, however, attracts more regulatory attention from RBI, is the potential of the accounts being restructured, at times, repeatedly, to avoid classification as NPA. The second category posed a moral hazard of a higher degree.

In view of the above and the lack luster performance of the scheme, it is learned that the RBI is entertaining the idea of doing away with the scheme and winding up of the CDR Cell and directed Cell to transfer all pending cases to the respective lead banks to complete the resolution process, following the existing law in force. In view of this, a vast majority of cases, that could not be settled through this window, would now tap the doors of the National Company Law Tribunal (NCLT) as per the procedure laid down under Insolvency and Bankruptcy (IBC) Code, 2016.

Activity – 15.2

1. List some of the companies that have bought back its shares recently.

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2. Highlight the merits and demerits of the buyback of shares.

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3. “The CDR Scheme has come very handy to the unscrupulous,” do you agree?

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15.8 LEVERAGED BUYOUTS

This is a kind of acquiring a controlling interest in the management of the company. It is a usual practice in the industry to take collateral on the assets of the company when a loan is extended. When the borrower fails to pay the interest or repay the loan, the lenders may show interest to acquire the firm through their right of using collateral. Not only private lenders, but banks and financial institutions also resort to this kind of practice. Therefore, the act of acquiring a company, using a loan given, to buy the shares of the company and thus become the owner of the company. Generally, all the lenders as a group acquire the majority interest in the company and thus take over. In the case of Banks, when they lend through a consortium, the consortium will take care of the process.

Though the practice of Leveraged Buyouts (LBOs) started during the nineteen fifties, it became popular only during the seventies and eighties of the twentieth century. As per record, the first LBO is said to have occurred in 1955, when Mc. Lean Industries acquired Pan-Atlantic Steamship Company in January 1955 and Waterman Steamship Company in May 1955 in the USA. Many private Equity firms in the USA had resorted to this practice. As far as India is concerned, this practice is not very popular.

As per the 2016 data, the LBO market in India accounted for about 9% of the total investment in the corporate sector and only about 3% of the total number of transactions. Besides, the Companies Act, 2013 prohibits a public company to provide security for the acquisition of its shares by another company. This limits the scope for LBOs in India. But RBI has permitted the lending Banks and Financial Institutions to convert their debt into equity. Technically speaking offering Equity as collateral will not be possible. It is also said to be one of the reasons for lack of popularity of this method of financial restructuring in India.

Basic Features of LBOs:

LBOs as a method of finance involve the following features:

- It is a guarantee ensured by the lender of the strict performance by the borrower.
- Companies trading on their equity opt for this kind of a model. Purchase of Assets of the company is done with a heavy dose of debt.
- The loan is secured by the debt of the company.
- This is considered as attractive method for inviting participation by private equity players.
- LBOs sometimes help in generating cash surpluses.
- Lenders generally expect a strong management and continuous outperformance.

Though in the American context, LBOs are quoted as the examples for win-win situation, there will be tremendous pressure on the borrower for better performance. If the business is failing for any exogenous reasons, the

outcome would be the loss of ownership by the promoters and playing into the hands of the lender. Perhaps, for these reasons, LBOs are not so successful even in the USA and other advanced countries.

Pre-requisites for LBO Environment:

The practice of LBOs to be successful, there is a kind of environment that should be present in the corporate sector and also in the economy. Some of the pre-requisites for this are:

1. The company must have an opportunity where major expenditures can be deferred. Often it is a company that has gone through a heavy capital expenditure program and whose plant is modern.
2. For the first few years, cash flows must be dedicated to debt service. If the company has subsidiary assets that can be sold without adversely impacting the core business, this may be attractive because the sale of such assets provides cash for debt service in the initial years.
3. The company must have stable, predictable operating cash flows.
4. The company should have adequate physical assets and/or brand names which in times of need may lead to cash flows.
5. Highly competent and experienced management is critical to the success of LBO.

Example:

Modern Manufacturing Ltd. (MML) has four divisions, viz., Chemical, Cement, Fertilizers, and Food. The Company desires to divest the Food Division. The assets of this division have a book value of Rs. 240 lakhs. The replacement value of the assets is Rs. 340 lakhs. If the division is liquidated, the assets would fetch only Rs. 190 lakhs. MML has decided to sell the division if it gets Rs. 220 lakhs in cash. Four top divisional executives are willing to acquire the division through a leveraged buyout. They are able to come up with only Rs. 6 lakhs in personal capital among them. They approached a finance consultant for financial assistance for the project.

The finance consultant prepares projections for the Food division on the assumption that it will be run independently by the four executives. The consultant works out that cash flow of the division can support debt of Rs. 200 lakhs, it finds a finance company that is willing to lend Rs. 170 lakhs for the project. It has also located a private investor who is ready to invest Rs. 24 lakhs in the equity of this project. Thus, the Food division of MML is acquired by an independent company run by the four key executives, which is funded through debt to the tune of Rs. 170 lakh and equity participation of Rs. 30 lakhs.

In the above case, two forms of funds are employed; debt (Rs.170 lakh), and equity (Rs.30 lakh). Thus, LBO permits going private with only moderate equity. The assets of the acquired division are used to secure a large amount of debt. The equity holders are, of course, residual owners. If things move as per plans and the debt is serviced according to schedule, after 5 years they will own a healthy company with a moderate debt. In any LBO, the first few

years are the key. If the company can repay debt regularly, the interest burden declines, resulting in improved operating earnings.

Two types of risk are involved in LBO. These are business risk arising out of the unsatisfactory performance of the company and the consequent failure to service the debt, and interest rate risk arising out of changing interest rates which may, in case of sharp rise, involve an increased financial burden.

Thus, the equity owners are playing a high-risk game and the principle of leverage being a double-edged weapon becomes evident. Another potential problem with the need to service debt is the focus on short-run profitability. This may have a telling effect on the long-term survival and success of the organization.

15.9 EQUITY RESTRUCTURING

This is also known as the reorganization of capital. In order to strengthen the Equity base, some companies follow this kind of practice. It may be in the form of a stock dividend, stock split, spin-off, rights offering, and reorganization of equity capital. This is mainly done to boost up the confidence of equity shareholders. Sometimes, the shareholders may feel that the prices of their shares are no longer reflective of the earning capacity of the company and the market is misinformed. As a measure of correcting the position, shareholders are prepared for any kind of restructuring.

The following are the reasons for shareholders agreeing to the reorganization of their capital:

- Correction of overcapitalization.
- Providing it as the liquidity option through buyback.
- For increasing the efficiency of the organization.
- To create confidence among the equity shareholders and the stock market that everything is in order.
- To wipe out accumulated losses.
- To write off unrecognized expenditure.
- To ensure proper debt-equity ratio.
- To raise fresh resources.

Section-66 of the Companies Act, 2013, provides for the reduction of share capital by a company if the company is authorized to do so under its Articles of Association. The company opting to reduce the capital may do it for any of the reasons and in the manner preferred by it. Some of these are:

- Extinguish or reduce the liability on any of its shares in respect of the share capital not paid up.
- Extinguish or reduce liability either with or without extinction.
- Cancel any paid-up share capital which is lost, or unrepresented by available assets.

- Pay-off any paid-up share capital, which is in excess of the requirements of the company.

15.10 DIVESTITURE

This is considered yet another form of corporate restructuring, having financial implication. Divestiture is an act of selling or disposing off a part of the business, a branch, factory, business location, etc. Generally, companies resort to this practice as a measure of excess load shedding. Sometimes, they may do it when it becomes operationally infeasible or inconvenient. There are many examples of divestment in the Indian Corporate Sector. They include the sale of cement plants to India Cements by Coromandel Fertilizers and MRPL a petrochemicals Joint Venture with HPCL, so as to strengthen its core business.

As per the study conducted by Earnest Young (EY), during June 2020, more than two-thirds of the Indian Companies (about 67%) are planning to divest their business operations in the next two years. The study reported that many companies are thinking of this measure due to the difficult times created by the Covid-19 pandemic. This has been necessitated to raise new capital, reduce debt levels and cope up with the advancements in technology. In addition, the following can be said to be the reasons for divestiture by a company:

- To refocus on the core business. Companies earlier might have gone for related and unrelated diversification and now wants to stick to the core area of operations, in which they are strong enough.
- To meet the future technological changes. When the company believes that the future changes in technology are going to be diverse and far-reaching, they may now redefine their own business and the same may lead to divestment.
- To strengthen operational ability. In times of intense competition, business firms have no other option, except to strengthen their operational efficiency. In order to check the diffusion of their ability in operation. Companies may dispose of units, that are considered extra.
- To raise additional resources for other projects or better investment may also happen when the company is in financial difficulty or distress.
- To reduce or mitigate political instabilities. Companies operating in more than one country like the MNCs, face these problems. When the economy in which they are located is instable either economically or politically, a decision may be taken to withdraw from such country. Sometimes, changes in the Government and their policies also may force companies to divest. The withdrawal of investments by Pepsico, HP, Macy's, etc. from Myanmar is often cited as an example of this kind.

15.11 DISINVESTMENT

Disinvestment is another form of financial restructuring followed by the companies. This is simply withdrawing the investment already made in the

company by way of sale of shares, sale of plant, or assets. Divestiture can be considered as one form of disinvestment. The term 'disinvestment' has come to prominence in India, when the Government of India and some of the State Governments started withdrawing their investments made in the Public Sector Enterprises (PSEs). Though the Government of India was entertaining this idea since the Nineteen Eighties, the process got momentum since 1991-92, the year from which Economic Reforms were started. The Government has also formulated a policy of 'Disinvestment' for this purpose.

The PSEs that were subjected to the policy of Disinvestment included BALCO, Hindustan Zinc, IPCL, VSNL, ONGC, HPCL, and many others. Every year, in order to raise resources for financing the Central Budget, the Government is setting the targets and is trying to sell away its share in PSEs from time to time. As per the information available, between 2014 and 2018, the Central Government has mobilized about Rs.1,95,000 crore through this process. The total sum collected from 1991-92 to 2019-20 stood at Rs.3,47,439 crore. In the Budget for 2020-21, the Government of India has put a target of Rs.2.14 lakh crore, which included Rs.90,000 crore proposed to be mustered by way of selling the shares in LIC, IDBI Bank, and many other Banks and Financial Institutions.

15.12 CHANGES IN THE TOTAL CAPITAL STRUCTURE

Thus far we have discussed about the restructuring plans for the individual sources of finance. In the ultimate analysis, firms may go for total change in the existing capital structure, which may involve buyback of share capital, debt reduction, conversion of debt or preference shares into equity and all other possibilities. There was a situation during eighties to opt for higher doses of debt to take advantage of the tax deduction. In those days, the interest rates were also higher and there used to be a significant gain in employing debt capital. After the economic reforms are being implemented since 1990s and considerable decline in the interest rates, firms have started infusing equity through vibrant capital market and profitability being handsome, return on equity turned very attractive.

Particularly in the current decade of two thousand ten to two thousand twenty, more and more firms are repaying their debts and trying to convert themselves as 100% Equity owned, and zero debt. The list of such companies from India included Hindustan Lever, HDFC Life Insurance, SBI Life Insurance, ICICI Prudential Life Insurance, Bajaj Holdings and Investments, SKF India, Maharashtra Scooters, CDSL, and Lakshmi Machine Works (LMWL). Usually, those companies that possess strong financials are choosing this route. While it is advantageous to improve upon the return on equity; companies with zero debt tend to pay higher taxes and thus higher cost of capital.

Usually, total reconstruction plans involve the following three steps:

- i) Determine the total valuation of the company by the capitalization of prospective earnings. For example, if future earnings of a company are

expected to be Rs.4 lakh, and the overall capitalization rate of similar companies average is 10 percent then applying the valuation technique of perpetuity, the total value of Rs.40 lakh would be set for the company. Perpetuity is valued as $V = \frac{P}{K}$

- ii) Determine a new capital structure for the company to reduce fixed charges so that there will be an adequate coverage margin. To reduce these fixed charges, the total debt of the firm is reduced by shifting to income bonds, preferred stock, and common stock. In addition, the terms of the debt may be changed. If it appears that the reconstructed company will need new financing in the future, a more conservative ratio of debt to equity may be thought of so as to provide for future financial flexibility.
- iii) Valuation of the old securities and their exchange for new securities. In general, all senior claims on assets must be settled in full before a junior claim can be settled. In the exchange process, bondholders must receive the par value of their bonds in another security before there can be any distribution to preferred stockholders. The total valuation figure arrived at in step (i) sets an upper limit on the number of securities that can be issued.

The existing capital structure of a company undergoing reconstruction is given as under:

	Rs. in Lakh
Debentures	18
Subordinated debentures	6
Preferred stock	12
Common stock equity (book value)	20
Total	56

If the total valuation of the company is to be Rs.40 lakh, the following could be the new capital structure:

	Rs. in Lakh
Debentures	6
Subordinated debentures	12
Preferred stock	6
Common stock equity (book value)	16
Total	46

After deciding about the 'appropriate' capital structure for the company, the new securities have got to be allocated. Thus, the debenture holders exchange their Rs.18 lakh in debentures for Rs.6 lakh in new debentures and Rs.12 lakh in income bonds, that the subordinated debenture holders exchange their Rs.6 lakh in securities for preferred stock, and those preferred stockholders exchange their securities for Rs.12 lakh of common stockholders would then

be entitled to Rs.4 lakh in stock in the reconstructed company or 25 percent of the total common stock of the reconstructed company.

Thus, the exchange claim is settled in full before a junior claim is settled. In a harsh reconstruction, debt instruments may be exchanged for common stock in the newly reconstructed company and the old common stock may be eliminated completely. Much depends on negotiation between the management and claimholders.

15.13 SUMMARY

The financial restructuring is a part of corporate restructuring. Businesses may plan for total restructuring or may only take up in small measure. Expansion of business operations may happen through related and unrelated diversification. Takeovers, Mergers and Acquisitions are the major methods of expansion in the process of Corporate Restructuring. One of the major aspects corporate restructuring is the Financial Restructuring.

There are many methods that can be followed to restructure the finances of a company, which may include Buyback of Shares, Conversion of Debt into Equity, Debt Restructuring, Leveraged Buyouts, Equity Restructuring, Divestiture, Disinvestment and finally Changes in the Entire Capital Structure. Whatever method is followed, it should contribute to the maximization of the value of the firm.

15.14 KEY WORDS

Corporate Restructuring is the process undertaken to change the complexion of the business either through takeovers, mergers, acquisitions or through financial changes.

Financial Restructuring is the process of reorganizing the finances of the business. This may cover divestment, disinvestment, etc.

Debt Restructuring refers to the adjustment of repayment schedules, subject to certain guidelines in force from time to time.

Leveraged Buyout is the act of acquiring a company using the loan given to it to acquire the shares of the company and thus become the owner.

Equity Restructuring is a practice involving the actions like declaration of stock dividend, stock split, spin off, etc.

Divestiture is an act of selling or disposing off a part of the business like a branch office, unit, factory, office, service center, etc.

Disinvestment is the process of withdrawing investment already made in the company by way of sale of assets, shares, etc.

15.15 SELF ASSESSMENT QUESTIONS

1. Distinguish between Corporate Restructuring and Financial Restructuring.
2. What are the provisions of the Companies Act, 2013, relating to Buyback of Shares?

3. Do you consider Buyback as a good option?
4. Explain the salient points of SEBI (Buyback of Securities) Regulations, 2018.
5. Illustrate with examples the process of conversion of Debt into Equity.
6. Highlight the impact of the Corporate Debt Restructuring Scheme on the Indian Banking System.
7. To what extent LBOs can be considered a viable option for Financial Restructuring in the Indian context?
8. Identify the conditions suitable for Equity Restructuring.
9. Explain the concept of Divestiture. Do you think that this is the suitable option in this pandemic situation like Covid?
10. “It is Myopic to disinvest the share of the Government in PSEs” – Argue.
11. Following is the Capital Structure of XYZ company:

i) Share Capital (Equity Shares of Rs.100 each, partially paid up Rs.50 per share)	1000 crore
ii) 11% Debentures (Rs.1,000 per Debenture)	500 crore
iii) 12% Preference Shares (Rs.1,000 per share)	500 crore
iv) Bank Loans (@ 13% Interest)	500 crore
v) Other short-term Borrowings	300 crore

Other Information:

- a) Earnings Before Interest and Taxes (EBIT) on the 100 crores Turnover of Rs. 2000 crore
- b) Tax Rate-applicable to the company 30%
- c) The Income of the company is not consistent over the years, and it got badly affected due to recession prevailing in the Economy.

What kind of Financial Restructuring plan, do you suggest to XYZ company. You need not limit to only single option. You can work out Three Plans like Plan-A, Plan-B and Plan-C.

15.16 FURTHER READINGS

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APPENDIX: TABLES

Table-1

Present value of Re. 1 to be received after 'n' years = $1 / (1 + r)^n$

No. of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.901	.893	.885	.877	.870
2	.980	.961	.943	.925	.907	.890	.873	.857	.842	.826	.812	.797	.783	.769	.756
3	.971	.942	.915	.889	.864	.840	.816	.794	.772	.751	.731	.712	.693	.675	.658
4	.961	.924	.888	.855	.823	.792	.763	.735	.708	.683	.659	.636	.613	.592	.572
5	.951	.906	.863	.822	.784	.747	.713	.681	.650	.621	.593	.567	.543	.519	.497
6	.942	.888	.837	.790	.746	.705	.666	.630	.596	.564	.535	.507	.480	.456	.432
7	.933	.871	.813	.760	.711	.665	.623	.583	.547	.513	.482	.452	.425	.400	.376
8	.923	.853	.789	.731	.677	.627	.582	.540	.502	.467	.434	.404	.376	.351	.327
9	.914	.837	.766	.703	.645	.592	.544	.500	.460	.424	.391	.361	.333	.308	.284
10	.905	.820	.744	.676	.614	.558	.508	.463	.422	.386	.352	.322	.295	.270	.247
11	.896	.804	.722	.650	.585	.527	.475	.429	.388	.350	.317	.287	.261	.237	.215
12	.887	.788	.701	.625	.557	.497	.444	.397	.356	.319	.286	.257	.231	.208	.187
13	.879	.773	.681	.601	.530	.469	.415	.368	.326	.290	.258	.229	.204	.182	.163
14	.870	.758	.661	.577	.505	.442	.388	.340	.299	.263	.232	.205	.181	.160	.141
15	.861	.743	.642	.555	.481	.417	.362	.315	.275	.239	.209	.183	.160	.140	.123
16	.853	.728	.623	.534	.458	.394	.339	.292	.252	.218	.188	.163	.141	.123	.107
17	.844	.714	.605	.513	.436	.371	.317	.270	.231	.198	.170	.146	.125	.108	.093
18	.836	.700	.587	.494	.416	.350	.296	.250	.212	.180	.153	.130	.111	.095	.081
19	.828	.686	.570	.475	.396	.331	.277	.232	.194	.164	.138	.116	.098	.083	.070
20	.820	.673	.554	.456	.377	.312	.258	.215	.178	.149	.124	.104	.087	.073	.061

No. of Years	Interest Rate per Year														
	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	.862	.855	.847	.840	.833	.826	.820	.813	.806	.800	.794	.787	.781	.775	.769
2	.743	.731	.718	.706	.694	.683	.672	.661	.650	.640	.630	.620	.610	.601	.592
3	.641	.624	.609	.593	.579	.564	.551	.537	.524	.512	.500	.488	.477	.466	.455
4	.552	.534	.516	.499	.482	.467	.451	.437	.423	.410	.397	.384	.373	.361	.350
5	.476	.456	.437	.419	.402	.386	.370	.355	.341	.328	.315	.303	.291	.280	.269
6	.410	.390	.370	.352	.335	.319	.303	.289	.275	.262	.250	.238	.227	.217	.207
7	.354	.333	.314	.296	.279	.263	.249	.235	.222	.210	.198	.188	.178	.168	.159
8	.305	.285	.266	.249	.233	.218	.204	.191	.179	.168	.157	.148	.139	.130	.123
9	.263	.243	.225	.209	.194	.180	.167	.155	.144	.134	.125	.116	.108	.101	.094
10	.227	.208	.191	.176	.162	.149	.137	.126	.116	.107	.099	.092	.085	.078	.073
11	.195	.178	.162	.148	.135	.123	.112	.103	.094	.086	.079	.072	.066	.061	.056
12	.168	.152	.137	.124	.112	.102	.092	.083	.076	.069	.062	.057	.052	.047	.043
13	.145	.130	.116	.104	.093	.084	.075	.068	.061	.055	.050	.045	.040	.037	.033
14	.125	.111	.099	.088	.078	.069	.062	.055	.049	.044	.039	.035	.032	.028	.025
15	.108	.095	.084	.074	.065	.057	.051	.045	.040	.035	.031	.028	.025	.022	.020
16	.093	.081	.071	.062	.054	.047	.042	.036	.032	.028	.025	.022	.019	.017	.015
17	.080	.069	.060	.052	.045	.039	.034	.030	.026	.023	.020	.017	.015	.013	.012
18	.069	.059	.051	.044	.038	.032	.028	.024	.021	.018	.016	.014	.012	.010	.009
19	.060	.051	.043	.037	.031	.027	.023	.020	.017	.014	.012	.011	.009	.008	.007
20	.051	.043	.037	.031	.026	.022	.019	.016	.014	.012	.010	.008	.007	.006	.005

Note: For example, if the interest rate is 10% per year, the present value of Re.1 received at year 5 is Re. 0.621.

Table-2

$$\text{Present Value of an annuity of Re. 1 for 'n' periods} = \frac{1 - \frac{1}{(1+r)^n}}{r}$$

No. of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.901	.893	.885	.877	.870
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847
16	14.72	13.58	12.56	11.65	10.84	10.11	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954
17	15.56	14.29	13.17	12.17	11.27	10.48	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047
18	16.40	14.99	13.75	12.66	11.69	10.83	10.06	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128
19	17.23	15.68	14.32	13.13	12.09	11.16	10.34	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198
20	18.05	16.35	14.88	13.59	12.46	11.47	10.59	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259

No. of Years	Interest Rate per Year														
	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	1.160	1.170	1.180	1.190	1.200	1.210	1.220	1.230	1.240	1.250	1.260	1.270	1.280	1.290	1.300
2	1.346	1.369	1.392	1.416	1.440	1.464	1.488	1.513	1.538	1.563	1.588	1.613	1.638	1.664	1.690
3	1.561	1.602	1.643	1.685	1.728	1.772	1.816	1.861	1.907	1.953	2.000	2.048	2.097	2.147	2.197
4	1.811	1.874	1.939	2.005	2.074	2.144	2.215	2.289	2.364	2.441	2.520	2.601	2.684	2.769	2.856
5	2.100	2.192	2.288	2.386	2.488	2.594	2.703	2.815	2.932	3.052	3.176	3.304	3.436	3.572	3.713
6	2.436	2.565	2.700	2.840	2.986	3.138	3.297	3.463	3.635	3.815	4.002	4.196	4.398	4.608	4.827
7	2.826	3.001	3.185	3.379	3.583	3.797	4.023	4.259	4.508	4.768	5.042	5.329	5.629	5.945	6.275
8	3.278	3.511	3.759	4.021	4.300	4.595	4.908	5.239	5.590	5.960	6.353	6.768	7.206	7.669	8.157
9	3.803	4.108	4.435	4.785	5.160	5.560	5.987	6.444	6.931	7.451	8.005	8.595	9.223	9.893	10.60
10	4.411	4.807	5.234	5.695	6.192	6.728	7.305	7.926	8.594	9.313	10.09	10.92	11.81	12.76	13.79
11	5.117	5.624	6.176	6.777	7.430	8.140	8.912	9.749	10.66	11.64	12.71	13.86	15.11	16.46	17.92
12	5.936	6.580	7.288	8.064	8.916	9.850	10.87	11.99	13.21	14.55	16.01	17.61	19.34	21.24	23.30
13	6.886	7.699	8.599	9.596	10.70	11.92	13.26	14.75	16.39	18.19	20.18	22.36	24.76	27.39	30.29
14	7.988	9.007	10.15	11.42	12.84	14.42	16.18	18.14	20.32	22.74	25.42	28.40	31.69	35.34	39.37
15	9.266	10.54	11.97	13.59	15.41	17.45	19.74	22.31	25.20	28.42	32.03	36.06	40.56	45.59	51.19
16	10.75	12.33	14.13	16.17	18.49	21.11	24.09	27.45	31.24	35.53	40.36	45.80	51.92	58.81	66.54
17	12.47	14.43	16.67	19.24	22.19	25.55	29.38	33.76	38.74	44.41	50.85	58.17	66.46	75.86	86.50
18	14.46	16.88	19.67	22.90	26.62	30.91	35.85	41.52	48.04	55.51	64.07	73.87	85.07	97.86	112.5
19	16.78	19.75	23.21	27.25	31.95	37.40	43.74	51.07	59.57	69.39	80.73	93.81	108.9	126.2	146.2
20	19.46	23.11	27.39	32.43	38.34	45.26	53.36	62.82	73.86	86.74	101.7	119.1	139.4	162.9	190.0

Table-3: Compound Amount of Re. 1 at the end of 'n' periods = $(1 + r)^n$

No. of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100	1.110	1.120	1.130	1.140	1.150
2	1.020	1.040	1.061	1.082	1.102	1.124	1.145	1.166	1.188	1.210	1.232	1.254	1.277	1.300	1.323
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331	1.368	1.405	1.443	1.482	1.521
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464	1.518	1.574	1.630	1.689	1.749
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611	1.685	1.762	1.842	1.925	2.011
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772	1.870	1.974	2.082	2.195	2.313
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949	2.076	2.211	2.353	2.502	2.660
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144	2.305	2.476	2.658	2.853	3.059
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358	2.558	2.773	3.004	3.252	3.518
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594	2.839	3.106	3.395	3.707	4.046
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853	3.152	3.479	3.836	4.226	4.652
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138	3.498	3.896	4.335	4.818	5.350
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452	3.883	4.363	4.898	5.492	6.153
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797	4.310	4.887	5.535	6.261	7.076
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177	4.785	5.474	6.254	7.138	8.137
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595	5.311	6.130	7.067	8.137	9.358
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054	5.895	6.866	7.986	9.276	10.76
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560	6.544	7.690	9.024	10.58	12.38
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116	7.263	8.613	10.20	12.06	14.23
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727	8.062	9.646	11.52	13.74	16.37

No. of Years	Interest Rate per Year														
	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	1.160	1.170	1.180	1.190	1.200	1.210	1.220	1.230	1.240	1.250	1.260	1.270	1.280	1.290	1.300
2	1.346	1.369	1.392	1.416	1.440	1.464	1.488	1.513	1.538	1.563	1.588	1.613	1.638	1.664	1.690
3	1.561	1.602	1.643	1.685	1.728	1.772	1.816	1.861	1.907	1.953	2.000	2.048	2.097	2.147	2.197
4	1.811	1.874	1.939	2.005	2.074	2.144	2.215	2.289	2.364	2.441	2.520	2.601	2.684	2.769	2.856
5	2.100	2.192	2.288	2.386	2.488	2.594	2.703	2.815	2.932	3.052	3.176	3.304	3.436	3.572	3.713
6	2.436	2.565	2.700	2.840	2.986	3.138	3.297	3.463	3.635	3.815	4.002	4.196	4.398	4.608	4.827
7	2.826	3.001	3.185	3.379	3.583	3.797	4.023	4.259	4.508	4.768	5.042	5.329	5.629	5.945	6.275
8	3.278	3.511	3.759	4.021	4.300	4.595	4.908	5.239	5.590	5.960	6.353	6.768	7.206	7.669	8.157
9	3.803	4.108	4.435	4.785	5.160	5.560	5.987	6.444	6.931	7.451	8.005	8.595	9.223	9.893	10.60
10	4.411	4.807	5.234	5.695	6.192	6.728	7.305	7.926	8.594	9.313	10.09	10.92	11.81	12.76	13.79
11	5.117	5.624	6.176	6.777	7.430	8.140	8.912	9.749	10.66	11.64	12.71	13.86	15.11	16.46	17.92
12	5.936	6.580	7.288	8.064	8.916	9.850	10.87	11.99	13.21	14.55	16.01	17.61	19.34	21.24	23.30
13	6.886	7.699	8.599	9.596	10.70	11.92	13.26	14.75	16.39	18.19	20.18	22.36	24.76	27.39	30.29
14	7.988	9.007	10.15	11.42	12.84	14.42	16.18	18.14	20.32	22.74	25.42	28.40	31.69	35.34	39.37
15	9.266	10.54	11.97	13.59	15.41	17.45	19.74	22.31	25.20	28.42	32.03	36.06	40.56	45.59	51.19
16	10.75	12.33	14.13	16.17	18.49	21.11	24.09	27.45	31.24	35.53	40.36	45.80	51.92	58.81	66.54
17	12.47	14.43	16.67	19.24	22.19	25.55	29.38	33.76	38.74	44.41	50.85	58.17	66.46	75.86	86.50
18	14.46	16.88	19.67	22.90	26.62	30.91	35.85	41.52	48.04	55.51	64.07	73.87	85.07	97.86	112.5
19	16.78	19.75	23.21	27.25	31.95	37.40	43.74	51.07	59.57	69.39	80.73	93.81	108.9	126.2	146.2
20	19.46	23.11	27.39	32.43	38.34	45.26	53.36	62.82	73.86	86.74	101.7	119.1	139.4	162.9	190.0

Note: For example, if the interest rate is 10% per year, the investment of Re.1 today will be worth Rs.1.611 at year 5.

Table-4
Compound amount of an annuity of Re. 1 at
the end of 'n' periods

$$\frac{(1+r)^n + 1}{r} = \text{FVIFA}(r, n)$$

n/i	0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100
4	4.0604	4.1216	4.1836	4.2465	4.3101	4.3746	4.4399	4.5061	4.5731	4.6410
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9.2004	9.4872
8	8.2857	8.5830	8.8923	9.2142	9.5491	9.8975	10.2598	10.6366	11.0285	11.4359
9	9.3685	9.7546	10.1591	10.5828	11.0266	11.4913	11.9780	12.4876	13.0210	13.5795
10	10.4622	10.9497	11.4639	12.0061	12.5779	13.1808	13.8164	14.4866	15.1929	15.9374
11	11.5668	12.1687	12.8078	13.4864	14.2068	14.9716	15.7836	16.6455	17.5603	18.5312
12	12.6825	13.4121	14.1920	15.0258	15.9171	16.8699	17.8885	18.9771	20.1407	21.3843
13	13.8093	14.6803	15.6178	16.6268	17.7130	18.8821	20.1406	21.4953	22.9534	24.5227
14	14.9474	15.9739	17.0863	18.2919	19.5986	21.0151	22.5505	24.2149	26.0192	27.9750
15	16.0969	17.2934	18.5989	20.0236	21.5786	23.2760	25.1290	27.1521	29.3609	31.7725
16	17.2579	18.6393	20.1569	21.8245	23.6575	25.6725	27.8881	30.3243	33.0034	35.9497
17	18.4304	20.0121	21.7616	23.6975	25.8404	28.2129	30.8402	33.7502	36.9737	40.5447
18	19.6147	21.4123	23.4144	25.6454	28.1324	30.9057	33.9990	37.4502	41.3013	45.5992
19	20.8109	22.8406	25.1169	27.6712	30.5390	33.7600	37.3790	41.4463	46.0185	51.1591
20	22.0190	24.2974	26.8704	29.7781	33.0660	36.7856	40.9955	45.7620	51.1601	57.2750
21	23.2392	25.7833	28.6765	31.9692	35.7193	39.9927	44.8652	50.4229	56.7645	64.0025
22	24.4716	27.2990	30.5368	34.2480	38.5052	43.3923	49.0057	55.4568	62.8733	71.4027
23	25.7163	28.8450	32.4529	36.6179	41.4305	46.9958	53.4361	60.8933	69.5319	79.5430
24	26.9735	30.4219	34.4265	39.0826	44.5020	50.8156	58.1767	66.7648	76.7898	88.4973
25	28.2432	32.0303	36.4593	41.6459	47.7271	54.8645	63.2490	73.1059	84.7009	98.3471
26	29.5256	33.6709	38.5530	44.3117	51.1135	59.1564	68.6765	79.9544	93.3240	109.1818
27	30.8209	35.3443	40.7096	47.0842	54.6691	63.7058	74.4838	87.3508	102.7231	121.0999
28	32.1291	37.0512	42.9309	49.9676	58.4026	68.5281	80.6977	95.3388	112.9682	134.2099
29	33.4504	38.7922	45.2189	52.9663	62.3227	73.6398	87.3465	103.9659	124.1354	148.6309
30	34.7849	40.5681	47.5754	56.0849	66.4388	79.0582	94.4608	113.2832	136.3075	164.4940

n/i	12.0%	14.0%	15.0%	16.0%	18.0%	20.0%	24.0%	28.0%	32.0%	36.0%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.1200	2.1400	2.1500	2.1600	2.1800	2.2000	2.2400	2.2800	2.3200	2.3600
3	3.3744	3.4396	3.4725	3.5056	3.5724	3.6400	3.7776	3.9184	4.0624	4.2096
4	4.7793	4.9211	4.9934	5.0665	5.2154	5.3680	5.6842	6.0156	6.3624	6.7251
5	6.3528	6.6101	6.7424	6.8771	7.1542	7.4416	8.0484	8.6999	9.3983	10.1461
6	8.1152	8.5355	8.7537	8.9775	9.4420	9.9299	10.9801	12.1359	13.4058	14.7987
7	10.0890	10.7305	11.0668	11.4139	12.1415	12.9159	14.6153	16.5339	18.6956	21.1262
8	12.2997	13.2328	13.7268	14.2401	15.3270	16.4991	19.1229	22.1634	25.6782	29.7316
9	14.7757	16.0853	16.7858	17.5185	19.0859	20.7989	24.7125	29.3692	34.8953	41.4350
10	17.5487	19.3373	20.3037	21.3215	23.5213	25.9587	31.6434	38.5926	47.0618	57.3516
11	20.6546	23.0445	24.3493	25.7329	28.7551	32.1504	40.2379	50.3985	63.1215	78.9982
12	24.1331	27.2707	29.0017	30.8502	34.9311	39.5805	50.8950	65.5100	84.3204	108.4375
13	28.0291	32.0887	34.3519	36.7862	42.2187	48.4966	64.1097	84.8529	112.3030	148.4750
14	32.3926	37.5811	40.5047	43.6720	50.8180	59.1959	80.4961	109.6117	149.2399	202.9260
15	37.2797	43.8424	47.5804	51.6595	60.9653	72.0351	100.8151	141.3029	197.9967	276.9793
16	42.7533	50.9804	55.7175	60.9250	72.9390	87.4421	126.0108	181.8677	262.3557	377.6919
17	48.8837	59.1176	65.0751	71.6730	87.0680	105.9306	157.2534	233.7907	347.3095	514.6610
18	55.7497	68.3941	75.8364	84.1407	103.7403	128.1167	195.9942	300.2521	459.4485	700.9389
19	63.4397	78.9692	88.2118	98.6032	123.4135	154.7400	244.0328	385.3227	607.4721	954.2769
20	72.0524	91.0249	102.4436	115.3797	146.6280	186.6880	303.6006	494.2131	802.8631	1298.8166
21	81.6987	104.7684	118.8101	134.8405	174.0210	225.0256	377.4648	633.5927	1060.7793	1767.3906
22	92.5026	120.4360	137.6316	157.4150	206.3448	271.0307	469.0563	811.9987	1401.2287	2404.6512
23	104.6029	138.2970	159.2764	183.6014	244.4868	326.2369	582.6298	1040.3583	1850.6219	3271.3256
24	118.1552	158.6586	184.1678	213.9776	289.4945	392.4842	723.4610	1332.6586	2443.8209	4450.0029
25	133.3339	181.8708	212.7930	249.2140	342.6035	471.9811	898.0916	1706.8031	3226.8436	6053.0039
26	150.3339	208.3327	245.7120	290.0883	405.2721	567.3773	1114.6336	2185.7079	4260.4336	8233.0853
27	169.3740	238.4993	283.5688	337.5023	479.2211	681.8528	1383.1457	2798.7061	5624.7723	11197.9960
28	190.6989	272.8892	327.1041	392.5028	566.4809	819.2233	1716.1007	3583.3438	7425.6994	15230.2745
29	214.5828	312.0937	377.1697	456.3032	669.4475	984.0680	2128.9648	4587.6801	9802.9233	20714.1734
30	241.3327	356.7868	434.7451	530.3117	790.9480	1181.8816	2640.9164	5873.2306	12940.8587	28172.2758